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THE ISLAND OF GUAM.

BY

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Guam is the largest, most populous, and most southern in position of the Mariana Islands, a group which trends almost north and south along the 145th meridian east from Greenwich, and between the 13th and 20th parallels of latitude, a distance of some 450 miles. The island is thirty miles in extreme length, and averages six and a half in width. It lies with its length nearly north and south, and is 207 square miles in area.

The southern part of the island is high and mountainous. A chain or ridge of hills, ranging in altitude from 700 to 1,300 feet, begins near the bay of Pago, and, extending to the west coast near Agaña, follows that coast to the extreme southern end of the island. The slope of the mountains is very steep to the westward; while towards the east it is gradual, and forms elevated plateaux, which terminate in abrupt bluffs on the eastern coast-line. These plateaux are broken by valleys of five streams, with their numerous tributaries, which, making their beginning near the top of the ridge, cross almost the whole width of the island to the sea on the east. The slope towards the west merges into low foothills some little distance from the sea, leaving a belt of rolling lowlands, valuable for cultivation or pasturage. From Agaña southward the coast is indented by numerous little bights or bays, lined by narrow strips of beach land, which are cultivated to a greater or less extent. Cocoanut groves are planted near the sea, together with patches of maize, taro, and camotes, the garden truck of the Chamorros, while here and there rice is growing where a small stream furnishes a swampy bottom.

The highest land on the island is in the southern part, and Mt. Jumullong Mangloc, which lies just east of the village of Umatac, attains an elevation of 1,274 feet above the sea. Mt. Itao forms the southern prominence, and is 1,100 feet high; while Tenjo, at the head of the bay of Apra, reaches an elevation of 1,080 feet, and makes a convenient landmark for vessels. The mountains, as a rule, are bare of vegetation, with the exception of stunted shrubs and grasses. The highest plateaux or mesetas are covered by "cogon" or sword grass, and the valleys are heavily wooded.

The topography of the northern half of the island is entirely



COCOANUT GROVE.

Trees on the left 3 years old; those in the middle 6 years; those on the right 10 and 15 years old.

different from that of the southern, inasmuch as it is one large plateau, ranging in elevation from 300 to 600 feet. The land slopes gently upward from the interior to the sea, where it terminates in abrupt headlands and steep bluffs. This part of the island contains no rivers, and the few inhabitants depend entirely upon the rainfall. The only elevation of any prominence is Mt. Santa Rosa, 840 feet above the sea. The coast-line from Agafia around the northern end of the island to Pago Bay presents a forbidding appearance with its nearly vertical cliffs from 350 to 650 feet in height. On the northern exposure the curving coast-line

encloses strips of valuable beach land, and wherever such strips exist, between the bluffs and the water, there are thickly-planted groves of cocoanut trees. The eastern exposure of the northern part, like that of the southern, is precipitous, dropping abruptly into the sea, with the reef lying so close that the waves, in stormy weather, break directly against the cliffs. The only beach land of any consequence along the whole of the eastern exposure is between the mouths of the Ilic and Tarofofo Rivers, in the southern part of the island.

It would appear that the mountain chain extending through the



TYPICAL PLANK HOUSE.

southern part of the island was thrown up by volcanic action in some remote geologic period, and that originally only this ridge and a very small part of Santa Rosa were above water. The conditions being favourable, the formation of coral reefs was begun which, together with alternate elevations and subsidences of the earth, have brought the island to its present state.

Guam possesses no known mineral wealth. Fragments of a heavy iron ore are found in the neighbourhood of Ilic Point, which resembles hematite in colour and weight, but it is not known that a

continuous vein exists. There is a tradition that coal is found on the islands, and that some years ago several tons were mined and tested on one of the Spanish steamers which formerly plied between Guam and Manila. This coal cannot now be found, and it is believed that the story is based on the existence of thin pockets of recent lignite found on the eastern slopes of the mountains. Gypsum is reported to exist on the island, but in what grade or quantity is not known.

There is very little heavy stone suitable for construction purposes, and the little that does exist is in inaccessible locations. A thick ledge of pale blue limestone crops out from the foothills near Agaña, which is quarried for use. It is a fine-grained, homogeneous stone, of specific gravity 2.5, weathers well, and is easily cut. Two grades of lime are manufactured on the island—one from the green coral taken directly from the reef, the other, called by the natives "Ayuyo," from limestone found in the hills. The latter grade only is used for building purposes by the Americans. Cascajo, or the disintegrated coral earth, which forms the body of the bluffs in some parts, is very valuable for road construction.

Nearly the whole of the northern meseta and the valleys of the rivers in the south are heavily wooded and contain considerable quantities of valuable hard woods. Omitting all species of lesser value, it is estimated that there are 20,000,000 feet of commercial Ifil, 15,000,000 feet of Palo Maria, and 10,000,000 feet of Chopag, which, at the present island price of \$45 per 1,000 feet, would make the value of the timber, at the very least, \$2,000,000. The timber should, however, be reserved for island purposes and permission to cut should be withheld. Besides Ifil (*Eperua decandra*), Palo Maria (*Calophyllum inophyllum*), and Chopag (unknown) there are various other woods of value which are not produced in sufficient quantities to be reckoned among the resources, such as Balibago (*Hibiscus tiliaceus*), Ajgao (Spanish name, *Molave*; scientific, *Vitex geniculata*), Mangle, Limoncito, the Bread-fruits, and numerous other species, of which the native name only is known.

The natural history of Guam is sufficiently well known to render unnecessary its introduction in a paper of this scope, but it may be stated in passing that there are on the island in the neighbourhood of 1,000 head of cattle, the same number of carabao, about 40 horses, and sufficient hogs, chickens, ducks, etc., for the use of the natives. In addition to domestic animals and fowls, there is an abundance of game in the way of deer, wild hogs and goats (originally domestic), duck, curlew, snipe, and pigeon. There are

numerous varieties of edible fish in the coral shallows; while sea turtle and crayfish may be caught in certain seasons of the year. There are no reptiles on the island except lizards, of which there are many varieties. Mosquitoes, centipedes, and occasional scorpions are to be met with, but the stings of the last named are not dangerous.

The climate of Guam is healthy, and, on the whole, pleasant. The northeast trades prevail for six months of the year, during which there is little rain. From June to the middle of December the monsoon blows, and its warm winds, striking the tops of the



STREET IN AGANA: STONE HOUSES.

hills, cause precipitation, and give rise to the so-called rainy season. During the year ending February 15th, 1902, the rainfall amounted to 102 inches, of which 60% fell during the rainy months. The greatest fall in any one day during the year 1901-2 was 6 inches, and the most prolonged drouth three weeks. The mean annual temperature is about 81°, and it is almost constant. There is always a pleasant breeze, and one can be quite comfortable when protected from the direct rays of the sun.

At intervals the island is visited by severe typhoons, which cause much loss of property and sometimes loss of life. One of the most disastrous in the memory of the inhabitants occurred November

13th, 1900, and destroyed all crops, fruits, and many of the wooden houses. As in the Philippines, earthquakes are of common occurrence, but prior to the recent severe shock of September, 1902, they had not for a long time been considered alarming.

The earliest accounts of the natives of Guam are found in the records of the old navigators and the Jesuit missionaries, who established the first mission in 1668. According to these reports, the original Chamorros were a fine race physically—athletic and warlike. They were good sailors and fishermen, and had some knowledge of the art of building. The island was thickly dotted with their villages, and the population was estimated at about 50,000 for the whole group—an estimate which does not seem so far wrong when it is considered that the ruins of their houses are found to-day in every part of the country. No attempt at colonising was made until the year 1668, one hundred and forty-seven years after the discovery by Magellan. The principal village at that time was called Jagatna, and was on the present site of Agaña. Spanish civilization and the methods used in converting them were distasteful to the natives, and the history of the first twenty years of the mission is a story of continual warfare, replete with murders, massacres, and treachery on both sides. Spanish conquest was finally complete, and a colonial form of government was established, which continued with but little change to the date of American occupation in 1898.

The population of the island is about 10,000, of which number 60% resides in the City of Agaña. Other towns in the order of their size and importance are Soume, Agat, Merizo, Inarajan, Umatac, Pitti, and Sinajaña, ranging in population from 650 to 150.

Social lines are rigidly drawn in Guam, and family has all the significance that it has in the oldest countries. The wealthiest class resides in Agaña, though all, or nearly all, own ranches, and depend upon their income for maintenance. Spanish officers assigned to the Philippines often married native women, and to-day in Guam the names of the "four hundred" include the family names of nearly every governor of the past two centuries.

Of the natives the men are short in stature, but well formed and strong in the legs. They have great endurance, but not much strength in the arms and back, and are not good at lifting weights or striking hard blows. They can walk great distances in the hot sun and carry quite heavy burdens. The women are well formed, very erect in carriage, and almost without exception have beautiful black hair, of which they take great care and are very proud.

The solid citizen of the upper class lives well, and enjoys such luxuries as he is able to obtain from the Japanese traders. He wears white drill clothing, the coat of which has a standing military collar, is cut like a white shirt, and worn on the outside of his trousers. He wears half slippers, without socks, and a straw hat. His wife and daughters are housekeepers and good cooks. Their dress consists of a full skirt of fine muslin or silk, and a zouave of delicate white embroidered material, low necked and with flowing sleeves. Since the American occupation a number of the young women have adopted our style of dress—an innovation which does not greatly add to their attractiveness. The men and women of this class do not use the betel nut, nor do the women smoke.

In town, the costume of the labouring class differs from that of its well-to-do neighbours only in the quality of material. The same style of shirt is worn on the outside of the trousers, and on Sunday a pair of half slippers is added. In the country the labourer wears a sandal made of a leather or fibre sole-piece held by a thong, which passes over the instep, around the heel, and between the toes. The women of the poorer class wear on feast days or Sundays a long, trailing skirt of brilliantly-coloured calico and a white muslin zouave over a short chemise. On their heads they wear a folded handkerchief of cheap quality. On working days their dress is of the same style, but older and much dirtier, with the train of the skirt tucked in the belt. They wear no stockings, and discard even the half slippers when indoors. At their ranches they tuck the skirt up above the knees and do all the harder kinds of labour with the freedom and ease of a man.

The impression has gained ground that the Chamorro is lazy; but such is not the case, in my opinion. It is hard to induce one of them to work for wages, but the reason is apparent; he needs money only for the purpose of paying his taxes. There are few things he can buy beyond rice during famine times—a little sugar now and then as a luxury, and a plug of tobacco as a great extravagance. If he works for wages it is partly a matter of accommodation, and he will not continue longer than a week, as he then has to go on his ranch to obtain enough for his family to live on during the working period. He may be less intelligent than the Tagalo, but he is a peaceful, good-natured, and law-abiding citizen, industrious in his own way and on his own work; he is clannish to the point of protecting miscreants from the law, even when he himself is the victim of the wrongdoing. He is slow to make friends, and a little suspicious of advances, but once having formed a

friendship he is staunch and true. After two years' experience in handling Chamorro labourers, no instance is recalled of a single direct falsehood, though instances of promises made and not fulfilled were frequent. The Chamorro is a devout Catholic, and every act of his daily life is regulated by his religion.

The rancher will never make a business success until he abandons his present practice of living in town and running out to his ranch on working days. This custom owes its origin to two causes: first, to the fact that the early Spaniards made it compulsory to live in



TYPICAL RANCH HOUSE.

the vicinity of a church (it was much easier in that way to collect taxes); and second, it was important to be near a water supply. All through the southern half of the island water is accessible, and in the northern part there are few places where wells could not be successfully driven, but the church will continue to be the obstacle in the way of a change until better and more roads are constructed from ranch districts to neighbouring villages. If a ranch is within an hour's walk of the town, its owner will spend two hours of his day on the road to and from his work; if at a greater distance, he will remain on his ranch for a day or two, and

sometimes for even a week, but will never fail to reach the village in time for the Saturday afternoon cockfight and for church Sunday morning and evening.

The approximate area of land under cultivation at present, as determined during the progress of the recent survey, is as follows:

Area of first-class cocoanut land.....	3	sq. m.
" " meseta " "	2	"
" " maize, camotes, and garden truck...	1	"
" " rice.....	0.70	"
" " coffee.....	0.17	"
" " sugar.....	0.15	"
" " cacao	0.08	"
Total.....	7.10	"

When it is taken into consideration that the area allotted to cocoanuts in the above includes all cleared lands where the trees are growing, with no matter what degree of cultivation, and that the other products, rice and sugar alone excepted, are produced on the same land, it may be said that less than 3% of the total area of the island is under cultivation to-day.

Of the products of the island, by far the most valuable is that taken from the cocoanut tree, and after come, in the order of importance, rice, sugar, coffee, and cacao. Maize and camotes (sweet potatoes) are not grown for sale, each ranch planting just enough for its own needs. The amount of rice that can be produced is limited by the acreage of swamp land, nearly all of which is at present cultivated. Sugar, coffee, and cacao can never become important sources of wealth, because of the outlay of capital and the labour required for their production.

Some idea of the importance of the copra trade may be obtained when it is understood that little labour is necessary either for the cultivation of the trees or in the preparation of the product for the market; that from 3 to 4 tons of prepared copra can be produced per acre of good land; and that there is in it a profit of from \$10.00 to \$20.00 net per ton. A complete account of the copra industry would be interesting in connection with any information concerning the Island of Guam, but the limits of this article do not permit more than the brief statement that the entire movement in copra for the year 1901 amounted, approximately, to \$18,000,000; that the price in any year of the last twenty has never fallen below that of the preceding year; and that the principal markets are Hamburg, Edinburgh, Marseilles, Hong Kong, and Yokohama.

It is estimated that at least 40% of the area of the island, or 80 square miles, is suitable for the cultivation of the cocoanut, and the manner of cultivation is such that the same land may at the same time be made to produce all of the other native crops, with the exception of rice and sugar. At \$40 00 net profit per acre (a conservative estimate) Guam, under favourable conditions, might attain an income of \$2,000,000 per annum. If anything like these results were ever obtained it seems reasonable to predict that a market for copra would be established at San Francisco, a small commerce built up with Yokohama and Manila, and possibly the whole of the south and central Pacific island trade be controlled by American interests centring in Guam.



RESULT OF THE EARTHQUAKE SEPT. 22, 1902.

Under Spanish administration the Marianas were governed by an officer of the army or navy, who held the title of Governor, and who was subordinate to the Governor-General of the Philippines. The powers of the executive were limited, and any act of his was subject to approval of the Philippine authorities, who in turn were governed by defined laws. All capital cases were subject to review by the Court of Cassation in Manila. The expenses of the insular government were largely borne by Crown appropriations, and the funds for the public schools were derived from the same source. A line of steamships was subsidized to maintain communication with

Manila at intervals of about two months. Taxes were nominal, and did not furnish more than about 15% of the amount annually expended, of which by far the greater part was derived from import duties.

Under American administration the natives have greatly benefited by examples set in matters of honesty in office, sanitary modes of living, and habits of industry; but in more material matters it must be admitted that in many ways the comparison is not in our favour. Among facts that might be cited in support of this assertion are: (1) Lack of Federal aid for the expenses of the insular government and for public works, notwithstanding the fact that the island has never been self-supporting since it was first brought under the influences of civilization; (2) failure to provide a code of laws and to limit the powers of the executive, whose orders, issued from time to time, have all the effect of statute law; (3) failure to define permanently and clearly personal and property rights; (4) failure to provide funds for schools, on account of which failure the only schools on the island to-day are mere classes taught by the Spanish friars in the Spanish language (formerly there were schools in every town and village, besides a college in Agaña, endowed by a Spanish sovereign); (5) failure to provide for transportation and mail facilities.

Under Spanish administration the more ambitious natives were educated in Manila, or even in Spain; while to-day an education of any sort is denied them, and in trade they are at the mercy of Japanese trading schooners. It is also true that while wages under American administration have advanced almost four-fold, the prices of commodities have more than correspondingly advanced, and it is, on the whole, harder for the native to earn a living to-day than in former times.

It is believed that only a fuller knowledge of these conditions is needed in order to arouse interest in this our smallest possession; interest not only on the part of the Government, which is sure to manifest itself in time, but on the part of private philanthropy as well, which can find nowhere a field of investment that will give more rapid and more positive results than on the Island of Guam.

THE RIVER-NAMES OF BRITISH GUIANA.

BY

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The want of proper vocabularies of the different Indian languages renders the study of our river-names very difficult. Nevertheless, the subject is so interesting, and the object to be gained so very desirable, that even a poor attempt to identify them will probably be better than none at all. If perfected the list would be useful in two ways: first, as indicating the habitats of different tribes; and second, for the light the names throw upon the ideas of these primitive peoples. If, for example, a creek-name is evidently Acawoio or Arawak, we naturally consider that habitations of one of these tribes were once located on its banks. In some cases there is more than one name for a river; in one place this may be Carib or Arawak, and in another Acawoio or Macusi; the majority, however, is Arawak.

Before dealing with the river-names we must say something of that of the country. Guiana has been well known from early time, and the name is found on the first charts. The earliest Spanish manuscripts of the middle of the sixteenth century mention the province of Quayena, and, in describing the Aruacas (Arawaks), say that their country is flat and level with the sea, being nearly all inundated in the rainy season. This accurately describes the coast, and also suggests that any descriptive name probably contains some reference to such a striking character. As we shall see presently, the word means "water," and may be compared to Avon and other river-names in the Old World.

However, we will not dismiss the name Guiana without mentioning other suggestions as to its meaning. Raleigh and the "El Dorado" seekers generally evidently confounded it with the Huayna of the Inca of Peru (Huayna Capac), and the story went that the heir to the throne of Peru escaped with great treasures to found the city of Manoa del Dorado. This suggestion is hardly worth considering, for the mistake is obvious. An Arawak Indian tells me that the name is derived from a tribe of Akayuanas, who, in some far-off time, occupied the country between the Orinoco and the Amazon long before the white man appeared. This tribe is supposed to have been a highly-intelligent and industrious people, and to the Acauyuanas are attributed the rock-pictures known under

the name of "Timehri." This name is given to the Akayuana Falls on the Essequibo. I do not give credit to this derivation, for it is most probably *akuya*, a kind of fish, and *wina*, water.

Coming now to the Indian words for water, which in the majority of cases terminate our river-names, we have, first, the Arawak *uni*, with its variants *eeni* and *wini*. *Uniabo*, variously spelt *ooniabo* and *wuniabuh*, means, primarily, rain; either the *uni* or the *abo* may terminate a river-name, *e. g.*, *Masar-uni* and *Cuy-uni* or *It-abo* and *Arissar-abo*. In its simplest form *uni* is found in the River *Wini* or *Wina*, spelt on Spanish charts *Guayni* or *Guiana*. It is hardly necessary to go beyond this for the identification of the name *Guiana*, but it may be stated that a softening of the *G* will assist; no doubt the original word was pronounced *wiana*. To confirm this we have the fact that the province of *Caribana*, inhabited by the *Guianians*, extended from the *Orinoco* to the *Essequibo*, of which district the River *Wina* is the centre. Migrating along the shores of the Caribbean Sea, the first arrivals, no doubt, noticed the change from the rocky shores of *Venezuela*, and called the inundated delta of the *Orinoco* and the coast-lands to the southeast by a name descriptive of its character.

The largest river, after the *Orinoco*, is the *Essequibo*. This name has been much corrupted. On the earliest Spanish charts it is called *Rio Dolce*, and Captain *Keymis* called it *Devoritia*, after the Earl of *Essex* (*Devereux*). Some charts give it as *Rio d'Esseke*, which at first suggests that *Essequibo* is, like *Devoritia*, in honour of *Essex*. However, the name is older than *Ralegh*'s captain, for we find *Desquixo* in Spanish documents long before his time. The *Bovianders* (those who live on its banks, *above yonder*) call it *Scapi*, which they say means a three-legged pot; but as such utensils were utterly unknown in early times, we cannot accept this derivation beyond a suggestion. It is just possible that the junction of the three rivers *Essequibo*, *Cuyuni*, and *Masaruni* may have given a fanciful idea of a tripod or three legs; but we have a much better explanation than that. The real derivation of the word is from *dassiqua*, my house, and *seba*, a stone; hence the older name *Dissekebe*. *Issequahu* is given as the root-word for house, but Arawaks never use substantives without the possessive pronoun. The explanation of the word house-stone is very simple. The Indian pot is an earthen vessel, very fragile, and it must be supported on three fire-stones in the absence of legs. My Arawak acquaintance tells me that the name originated as follows:

A long time ago, when the Spaniards first overran the country, the white men

hunted our people with dogs, and, when caught, the elders were cruelly tortured to extract information of hidden treasure, and infants dragged from their mothers' arms and thrown to the dogs. Hence our people had to flee for their lives from one river to another, often to places where no stones for supporting the pots could be had, and where, therefore, it was of great importance that they should carry fire-stones in their canoes. The usual number in a canoe was nine, with which, by proper arrangement, four pots or *dwaadas* could be supported. It happened that a fleet of canoes, filled with Arawaks, once, in seeking protection at the Dutch Fort Kyk-over-al, encountered a heavy squall somewhere near the mouth of the river, the result being that most of the canoes were upset. The Arawaks swam ashore; they recovered their canoes, but not their fire-stones; hence they named the river *Dissekeebo*, or river of (my) fire-stones.

This story is not quite right, for the river was named before the Dutch fort came into existence; nevertheless the meaning of the name is fairly settled. In its upper reaches it is called *Sipu*, which means rock or stone. I have been told that this means also a place for washing; but, as the little washing is done by pounding on stones, there is nothing incongruous in either derivation. The Essequibo also goes by the name of *Araunama*, from a kind of fish found in its upper waters.

Another word found commonly as a prefix or termination of river-names is *bara* or *para*, properly the sea, but applied to rivers and creeks as well. There is a Para Creek in Dutch Guiana, and the Brazilian Pará, interpreted as "the mother of waters," is the same word. Lake Parima of the El Dorado seekers and the River Barima, no doubt, are synonymous. The Orinoco is named on old charts Rio de Paria, Yuyapari, or Huriparia. In combination it is found in many names of creeks in the Demerara River, e. g., *Una-baru* (Bird's Creek), *Yacuri-baru* (Alligator's Creek), *Seba-paru* (Silk-cotton-tree Creek), and *Sakwa-paru* (Macaw's Creek). *Wini-peru*, in the Essequibo, is probably *uni-paru*.

However, we must not be too hasty in our conclusions, for *bara* is the name of the little dogfish, a species of *Cyphla*. This is possibly the root of *beri* in the name of the River Berbice (formerly Beribeece or Berbeeshees). *Beece* is place or haunt, and therefore the Berbice would be a good fishing-place for the Bara fish. A creek in the Essequibo named Baribara is possibly the name of the fish with that of water or creek.

Beece, *biscé*, or *bisé* as a termination is fairly common. My Arawak acquaintance says it means offshoot or branch, but hunting-ground or place for fishing seems more to the point. He gives the following tradition of the origin of the name *Itooribisce* (Howling-monkey's Creek), in the estuary of the Essequibo:

During the tribal war between Arawaks and Caribs the latter cut off their enemy

from all access to the Arawak hunting grounds of the northwest. However, nothing daunted, the Arawaks sent a party to the Essequebo with a view to obtain a supply of barbecued meat. Coming into that river, they were disappointed to find it destitute of all game except baboons (red howling monkeys); but, doing their best, they dried a supply of these and embarked on their return voyage. Off the Itooribisce Creek they were beset by chopping seas, too rough for their frail canoes; they were upset, and the provision supply lost. Hence the name Baboon's Place or Creek.

Near this creek is the *Aroabisce*, or jaguar's haunt, near an island of the same name. Curiously enough, this has been corrupted in such a way that the shore near by is known as the Arabian Coast, notwithstanding which the island is rightly named Tiger (local name for jaguar) Island. Corruption has made sad blunders with many of our names, and it is only by studying old charts that we are able to get at something like the original Indian name. Even then the difficulties are not ended, for words nearly alike are often indistinguishable when compounded. As examples of this I will mention that *Ara* is the blue macaw, *Aroa* the jaguar, and *Arara* the alligator.

Another termination in the names of creeks is *kiabooraa*, *cabra*, or *capura*, meaning plenty or abundance. It is used as an Arawak synonym for the Acawoio *baro*. Where creeks are known under two names we have the Alligator Creek, called *Kaicuchi-kabooraa* by the former and *Yacuri-baro* by the latter. In the upper Berbice and Demerara, formerly inhabited by Acawoio, *kabooraa* is often found as a termination in creek names, but near the coast not a single example can be found.

Demerara has been so much corrupted that it is hard to identify. The earliest form of the name is Dumaruni, and some Spanish charts give it as Rio de Mirara. The most probable identification is from the old name Temmerary or Dimmerary, the Timeneere or letter-wood, well known as one of the exports from Guiana in early times. Another early name was Immenary, said to be the name of *Curatella americana*, the leaf of which is used in place of sand-paper for polishing bows and clubs.

The Corentyne was originally the Curetini or Hawk River; the Abary, Wapari, probably from the Wallaba (Wapa), *Eperua falcata* being plentiful there. Pomeroon was formerly Bouroma, possibly a variant of Barima, perhaps from *bereme*, the ant-bear. Cuyuni is named from a bird (*Penelope*), Masaruni from a timber tree (*Aspidosperma excelsum*), and Maruca, or Moroco, from Morequie, the jabiru or giant stork.

I have prepared a list of about three hundred names, some of

which I have been unable to identify; but enough has been learnt to get a general idea of the meanings. Assistance has been obtained from persons who have lived among the Indians, but in many cases it is as difficult to get information from the aborigines as it would be to obtain the meaning of local names from an English labourer. They use the same words as their fathers, but do not trouble to find out their meanings. In some cases the original inhabitants have died out; even tribes are entirely lost, with not even a parrot to give us an idea of their language. In some cases the name was intended to commemorate some past event the story of which is lost. Superstitious fancies, no doubt, as in Creole names like Devils' and Jumbi Creeks, are responsible for some names. The Wieronie, a large affluent of the Berbice, is the Siren's Creek—the place where the mysterious water-mamma dwells. This mischievous creature is supposed to upset canoes and drag their occupants down to some habitation beneath the dark waters. It is interesting to note that the prickly palm, *Desmoncus*, which hangs out its terminal hooks in such a way as to be dangerous to boatmen, has a name, *Weeri*, which suggests the water-sprite. Species of *Podostomaceæ*, that grow on rocks about the rapids, are called *Weyra*, and a swimmer may easily be entangled in their slimy meshes.

In most cases, however, the names are obviously given from some striking character which impressed the first inhabitants. It was a good place for hunting some animal; a certain kind of fish was abundant in the water, or game birds plentiful in the trees. The creek where macaws resorted became Macaw's Creek; that where a big snake was found, Camondi Creek; and if good timber, medicines, or fish poison were to be had the name commemorated the fact.

Hardly a game beast, bird, or fish can be mentioned the name of which is not represented. *Cama*, the tapir, was, no doubt, found in the Camouni; the *Aboayah*, or peccary, in the Abooydary; *Cabywa*, the water-haas, in the Cabeparu, and *Saree*, the deer, in the Sarobaro. Roppong ducks are common in the Rupununi, Hannaqua in the Yanekuru, Macaws in Araha, and Trumpeter birds in Waracaba. The Indian caught Acara fish in the Acarabise, Yacotta in the Yacatta, Electric eels in the Arinda, and Arowana in the creek of that name. He found the Purple-heart (*Copaifera*) to make his wood-skin in the Culiburicabooraa, his silk-cotton in the Sebuy, his bow-wood in the Masaruni, and his wood for a club in the Itiki-booroo. When he went to the Kanaima Creek he found it wild and hard to penetrate, so he called it lead; in the Ganguk and the

Weri-weri he was troubled with flies; in the Akuina he found a large Camondi snake. The Seba Creek was rocky, gold was found in the Caracuru, and the waters of the Hoonilian were wonderfully cold. Fruit and nuts were found in some; the Hog-plum in the Hooboo, Saouari nuts in the Sawiare, and Pineapples in the Kayoyeroyaro. In the Buraburaro-cabra he heard the peculiar voice of the frog of that name, and he got his arrow poison from the Yuruari.

From these examples it may be seen that these creek-names have meanings which show that the Indian is by no means foolish. A striking point is that rarely, if ever, is a creek named after a person. Now and again there may be a suggestion of some chief's name, but this is so doubtful that we have to dismiss it as untenable. An Indian village may be known to white men as John's or Peter's, but to the people themselves, if there is any name at all, it is one founded on some natural object in the neighbourhood. The Indian has a tendency to speak of his house (my house) or cassava field, and probably many names of creeks have been placed on charts from misunderstandings. Possibly the traveller asked what place it was, or what was the name of a creek, and the answer *Dassiqua* (my house) became the creek-name. Possibly, also, mere statements that a cassava field was situated on its bank, or that maize or tobacco was grown there, gave rise to a class of names which, although not so large as those we have been dealing with, nevertheless are fairly common.

Not only is the house itself brought into the name but almost everything in and around it. The forest home of the Indians is a thatched shed, open on every side, generally known under the name of *benab* or *benabo*. Near the dwellings or within an easy distance is the provision ground or cassava field, *Abunnun-kali*. The word *Abanna* means a leaf, and is applied to cultivated plants generally; and probably in composition, as in *benabo*, refers to the palm thatch. Creeks named Abanakire, Ibanacoa, Banacabooiry, and Banim probably were so called from their having once had important settlements on their banks. Of quite as much importance as the shelter is the fire; we have already spoken of the fire-stones. No doubt, when fire could only be procured by a drilling process with two sticks, the hearth was carefully guarded and the embers never allowed to be extinguished. It is even possible that the *benab* was as much to protect the fire from drenching rain as to shelter its human occupants. As might be, therefore, expected, the word for fire, *Ahpo*, occurs in several creek-names, *e. g.*, Aping,

Apoacka, and Apipano. Appapara means food or victuals, probably cooked; there is a creek of that name and another called Apparoo. Of the foods prepared by the Indians cassava is of the utmost importance, and we therefore find creeks named Carasawa, Kashwaicuru, Crushiweyu, and Cassairiba—the last probably meaning Cassareep, the evaporated juice used for "pepper pot." Cassava bread is *Kallicaro*, from which we get the Calicaboura Creek. Next to cassava we get maize, *Annay*, in the creeks Anapari, Anabaro, Anahita, and Hannawohe.

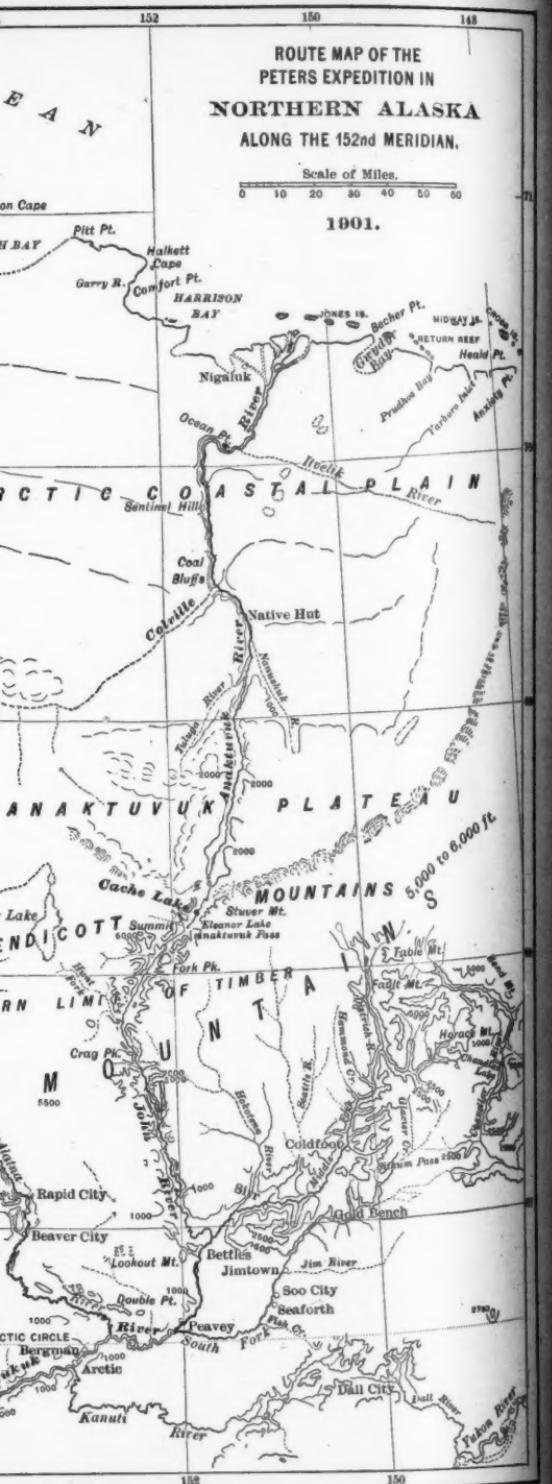
As might be expected, few foreign names have been used, except by creoles, who speak of Calabash Creek where the Indian says Maraka. Possibly one of the most curious phonetic names for a foreign bird is that of the domestic fowl, from which a creek is named Canirecooroo. Cocks and hens are common about the Indian settlements; they are sold to strangers, but hardly ever eaten by their owners.

The principal furnishing of a benab is the hammock; the name of the Amacura River is probably derived from this useful article. Baskets, *Catauri*, are commonly used for various purposes; hence Kateronero Creek. I can only find one creek, the Canoacaboor, in which the name of the canoe occurs; probably every creek was navigated, and therefore the name would hardly be distinctive. We find the bow (*Wababo*) and arrow (*Shimara*) in the Hobabo and Shimkuna, and the club (*Tiki*) in Ithakka. Itikibooroo is the wood from which clubs are made; it gives the name to two creeks.

In conclusion, I may remark that these names prove the Indian to be entirely practical. There appear to be no abstract ideas beyond the water-sprite superstition, and one other that refers to a mysterious arrow that pierces unseen and causes sickness. Black and white, or rather dark and clear, waters give names to some creeks, but, generally speaking, adjectives are rare. As may be seen from the examples, Indian words are not difficult to pronounce, and we may presume that these river-names will last.

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A RECONNAISSANCE IN NORTHERN ALASKA.

(WITH MAP.)

The United States Geological Survey has just published under the above title (Professional Paper, No. 20) the report of F. C. Schrader on the work of the expedition in charge of W. J. Peters in 1901. Their journey was across the Rocky Mountains, along the Koyukuk, John, Anaktuvuk, and Colville Rivers, and the Arctic coast to Cape Lisburne. It was one of a network of reconnaissance traverses that have been extended over a large part of Alaska. These route surveys, preceding more detailed topographic and geologic mapping, outline the main features of the country, leaving the minuter studies to later investigators. Mr. Peters was the topographer and Mr. Schrader the geologist of the party.

Previous to 1901 only two journeys yielding geographic results had been made across northern Alaska by white men. Lieut. Howard, U. S. Navy, in 1886, crossed the country from Kowak River to Point Barrow on the Arctic coast. In 1890, J. H. Turner followed the 141st meridian from the Porcupine River to the Arctic coast. The survey made by Schrader and Peters is, however, the first carried out with precise instruments from the Yukon to the north coast of Alaska. It outlines some of the most important of the physical features and drainage channels of the northern part of the Territory. The map of the route accompanying this article is based upon one of the maps in the report.

The time devoted to actual field work—from Bergman on the Arctic Circle to Pitt Point on the Arctic coast, 513 miles—was sixty-five days. The journey was made by canoes, this mode of conveyance being interrupted only by a short portage between the upper John, a large affluent of the Koyukuk, which flows to the Yukon, and the Anaktuvuk, tributary of the Colville River, which flows to the Arctic Ocean.

The canoes started up the John River on June 13. The water was high and very swift. Snow had disappeared, except on some of the highest mountains. Occasional stops of one day each were made to ascend prominent points and carry on the mapping. The northern limit of spruce was passed on July 8. Beyond this was a thin growth of willows along the stream and its tributaries. From July 9 to 15 the river was a constant succession of rapids and dangerous rocks. On July 17 the outfit was packed over to a

small lake, which was named Cache Lake. It empties into the Anaktuvuk, and the expedition was now on the Arctic slope. Numerous small lakes were found along the divide. Grayling abounded in the lakes, several caribou were shot, and goats were in considerable numbers on the mountain tops.

On July 24 the party started down the Anaktuvuk, and four days later emerged from the mountains and began to float along the rolling plateau in a fairly straight course. Mosquitoes had almost disappeared, many caribou were seen, red top grass was growing in many places, and willows several inches in diameter, with some balm of Gilead* growing to a height of thirty feet, were scattered along the banks of the river.

On August 9 the expedition ran into the Colville River, which is here 12 feet deep, 800 feet wide, and with a current running four miles an hour. Five miles below the confluence of the Anaktuvuk there is a short stretch of rapid water (six miles an hour), below which the current is not over two miles an hour. The river gradually widens to 5,000 feet at the head of the delta, which was estimated to be about 20 miles wide, with the westernmost channel probably navigable to the sea. Eskimos who were found here took the party in their boats to Point Barrow, where they arrived on September 3. Two days later they started with a whale boat for Cape Lisburne, where they caught a steamer for Nome, from which place they took the regular steamer for Seattle.

Throughout the journey north prominent points near the rivers were ascended at intervals of about ten miles for topographic sketching on the plane table. Between these stations a traverse of the rivers was made with a prismatic compass and stenometer. The plat of the traverse was transferred to the plane-table sheet and fitted to the located points. The orientation of the plane table was controlled by the azimuths, determined with the theodolite when necessary.

There are about 100 Indians on the upper Koyukuk. A settlement usually consists of a few cabins and tents, the favourite sites being at the mouth of some tributary stream. The village at Bettles, larger than most of the others, shows the tendency of the natives to remain near a trading-post. They are often employed by the whites for boating, sledding, and other work, receiving in return provisions and clothing, which, added to game and fish, give them a living. Their chief sources of food and clothing, be-

* A name given in the United States to a variety of the *populus balsamifera*.

sides what they receive from the whites, are caribou, bear, salmon, whitefish, rabbits, grouse, and ptarmigan.

With the exception of about a dozen white persons at Cape Smyth, near Point Barrow, and some at Point Hope, the bleak Arctic coast, from the international boundary to Point Hope, 800 miles, is inhabited only by Eskimos, numbering about 1,500 persons. Their settlements are far apart, but there is yearly communication between all these points. The largest villages are at Point Hope, with a population of 314, and at Cape Smyth, with 623 Eskimos. The principal supply of food is derived from the whale, walrus, seal, polar bear, and some small fish. During the summer there are large numbers of geese and ducks. The caribou, among land animals, is most important for food and clothing. The Alaskan Eskimos are rapidly losing their racial purity, owing to admixture with other races visiting that region, chiefly on whaling vessels. Children of pure Eskimo blood are very few. About a dozen white persons live at Point Barrow, and Dr. and Mrs. Call have a mission school at the White Settlement. The Cape Smyth Whaling and Trading Company maintains a post for purposes of trade with the natives and whalers. Point Barrow is almost annually visited by steamers of the United States Revenue Service and various whaling vessels. Whaling in this part of the Arctic is now reported to be on the decline. The pursuit is hazardous, as the vessels are often caught in the pack ice.

Geographically, the region traversed consists of three well-marked provinces—the mountain or middle, the Koyukuk or southern, and the Arctic slope or northern. The most striking is the middle or mountain province, which consists of an inland range of rugged mountains trending east and west.

These mountains, at the place where they were crossed, have a width of about 100 miles, an average elevation of about 6,000 feet, and are a part of the northwestern continuation of the Rocky Mountain system. They stretch east and west through the region marked "Rocky Mountains" on the map. Where the main range appears in Canada, between the international boundary and the Mackenzie River, it is called the Davidson Mountains. The several small groups further north between the main range and the coast, extending from the 138th to the 148th meridians, have received the names Richardson, Buckland, British, Romanzoff, and Franklin. They are all probably more or less closely connected with the main range, and seem to represent the northward dying out of the mountains near the Arctic coast.

These more northern groups are usually between 2,000 and 4,000 feet high; while the height of the main range is from 5,000 to 7,000 feet. The part of the main range through which the expedition passed is a portion of the Endicott Mountains discovered and named by Allen in 1885.

Where crossed by the Geological Survey party the range lies between the rolling, hilly country of the Koyukuk Basin on the south and a very gently-undulating plateau country on the north. On the south the rise from the rolling country to the mountains is by foothills, but rapid. On the north the mountains break off abruptly and steeply, and pronounced faulting and uplift are shown by fault scarps and marked deformation of the strata. The topography of the range varies according to the character and structure of the rock formations. The slates, quartzites, and conglomerates are marked by sharper crests and peaks than the limestone areas, whose ridges are broader and more rounded, and often bordered by steep cliffs with extensive slopes of heavy talus at their foot.

The line of profile extending through the entire region from the Koyukuk to the Arctic traverses for the first 120 miles an undulating country, whose low, rounded hills attain elevations of from 1,000 to 3,000 feet. It then crosses the rugged range of mountains, 100 miles wide and about 6,000 feet high. Then it descends steeply to an elevation of 2,500 feet at the inland edge of a gently northward-sloping plateau of rolling plains. It traverses this rolling plain for 80 miles, and thence passes for about 80 miles through a nearly flat tundra country or coastal plain to the Arctic coast.

In the portion of the mountain range crossed by the survey party the drainage is chiefly south into the Koyukuk. The master stream is the John River, which rises near the northern edge of the range. Though the John valley is among mountains, and contains some cañons, it is broad, and generally open, occupying about one and a half miles from base to base of the mountains. In places, however, the valley is much wider, and the river describes great bends from side to side. The present channel has apparently been sunk into several older valley floors, as is shown by the bed-rock benches along the sides of the valley. These benches occur at heights of 1,700 to about 100 feet above the present stream, and seem to mark stages of comparative rest in the progress of orographic uplift.

The Koyukuk or southern province lies chiefly in the north-western part of the large basin of the Koyukuk. It consists mainly

of a rolling or hilly country of known or supposed Mesozoic rocks, whose hills rise to elevations of 1,000 to 3,000 feet; while the main valley floors are approximately 600 feet above sea-level. The drainage is to the Yukon, the master stream being the Koyukuk, which is navigable to near the 67th parallel.

The Arctic slope province embraces almost the whole of the Colville basin, and consists, primarily, of two distinct features—plateau and coastal plain. The name Anaktuvuk Plateau is proposed for the gently-rolling plateau above referred to. It is composed of Mesozoic rocks, and extends with gentle slope northward for 80 miles.

North of the plateau the Arctic coastal plain descends to sea-level, with slope so gentle as to be inappreciable to the naked eye. The flat surface is dotted with very shallow ponds, which, in most instances, are without outlet. Along the west side of the Colville the eroded edge of this part of the plain forms continuous steep bluffs, which decrease in height from 200 feet, at the mouth of the Anaktuvuk, to about 80 feet at Ocean Point, 40 miles further north. The master stream of the Colville River has a drainage basin of about 30,000 square miles. It rises in the northern part of the Endicott Mountains, makes a long detour to the west and back, and traverses both the Anaktuvuk Plateau and the coastal plain.

The Arctic coast, from the mouth of the Mackenzie to Point Barrow, is low and flat, the actual shore-line being formed by a low shelving beach whose seaward extension forms the shallow sea-floor. The surface of the tundra often descends to within a few feet of tide-level. It is inferred that the coastal shelf extends far offshore.

The geological structure of the country traversed is treated at great length, but only a few of the facts reported can be included in this summary. The rocks of the section along the route comprise representatives of most of the geologic ages, ranging from Silurian to Pleistocene. The oldest rocks consist of several metamorphic series, principally of sedimentary origin, which have acquired their present character largely by processes of mountain-building. These metamorphic rocks are exposed only in the mountainous portion of the field. Igneous rocks were not observed unless at one place on the John River, where, at a distance, the limestone appears to be cut by the intrusion of dikes.

A series of tertiary terranes underlies the flat tundra country. Glaciation in geologically recent time has been far more extensive

than was supposed. There is much evidence of ice action in the valleys within the Endicott range and in the Koyukuk province.

There are indications of mineralization nearly all the way northward through the Endicott Mountains, but the principal producing region is on the upper part of the middle and north forks of the Koyukuk River. Though this region contains coal and some lead, copper, and antimony, gold alone has thus far proved to be of economic importance. Coal in one form or another occurs in the Koyukuk range, on the Anaktuvuk plateau, on the coastal plain, and at several points along the coast.

In addition to the topographic and geologic maps, the report is beautifully illustrated with numerous photographs, showing all the different aspects of the country, including the valley of the John, the Endicott Mountains, the Anaktuvuk plateau, the bluffs along the Colville, the Arctic coast, and the edge of the moss-covered coastal plain.

THE POPULATION OF INDIA.

The India Office now issues as a Blue-Book the voluminous General Report and tables—monuments of unpretentious learning and patient labour that form a fitting close to the herculean task of numbering nearly 300,000,000 people. The primary responsibility for the census fell upon Mr. H. H. Risley, C.I.E., who acknowledges his indebtedness to the army of 1,457,400 persons who aided him.

Of the total area of India, 1,766,597 square miles, 61.5 per cent. is under direct British administration, as is also 78.8 per cent. of the total population, 294,361,056. The native States, while comprising over one-third of the area, include much less than one-quarter of the people. The largest British province is Burma; but the most populous is Bengal, with 78,500,000 persons, or practically a population as large as that of the United States. Next come the United Provinces, 48,500,000, and Bombay, 42,500,000. Hyderabad with 11,000,000 stands first among the native States.

The most important factors affecting the rural distribution of population are the amount and regularity of the water supply. The most densely-peopled tract in India, a Cochin taluk,* with 1,920 per square mile, has the heaviest and most regular rainfall; while

* *Taluk* is a subdivision of a district.

the scantiest population is found in the almost rainless regions of Jaisalmer. But various influences—irrigation, forests, etc.—modify this correspondence between density and rainfall. The highest density among the 20 meteorological divisions is in the Bengal Delta—552 people per square mile, with a rainfall of 80 inches, after which come the Himalayan region and the Indo-Gangetic plain. The lowest density (11 per square mile) is in Baluchistan. Where the rainfall dwindles irrigation may maintain a high density, as in the Punjab, where canals secure 12,000,000 acres from crop failure.

The general standard of comfort is highest in Eastern Bengal, where there is an extremely dense and rapidly-increasing population, three-fourths of whom live by agriculture. Muzaffarpur (Bengal) has a density of 917, owing to constant subdivision of property among petty proprietors. In Assam 97 per cent. of the people live in villages, and tea, its one industry, tends to prevent the growth of towns, since each large garden forms a centre in itself. In Baluchistan 44 per cent. of the people pursue a pastoral, nomad life.

Taking India as a whole, we find that only one-tenth of the population live in towns. The tendency to town life is most marked in Baroda and Gujarat, least marked in Baluchistan, Kashmir, and Assam. In populous Bengal only 5 per cent. live in towns of over 5,000 people. The increase in the urban populations revealed by the census (about 7.3 per cent.) is mainly ascribed to railway extension and to the development of industry and commerce, but the congregation of famine-stricken country people in certain towns at the census time is a factor to be remembered.

With regard to religions, the Parsis, Jains, and Christians live in towns to the extent of 85, 30, and 22 per cent. respectively. In Bengal, Assam, Baluchistan, and the Punjab the Mussulman takes less to town life than the Hindu, but elsewhere the reverse holds true. India has only 29 cities with over 100,000 inhabitants. Most of these are old, political capitals, trade centres, or sacred cities. Some, like Patna, Benares, Allahabad, and Mandalay, are stationary or decadent; others, like Delhi, Cawnpur, Agra, Ahmadabad, and Nagpur, have adapted themselves to new industrial conditions and progressed; while others, like Rangoon and Karachi, have practically been created by modern commerce. Calcutta (including the thriving industrial suburb of Howrah) ranks among the 12 chief cities of the world, with 1,106,738 people—an increase of 24 per

cent. since 1891. Its industrial character is shown by the fact that two-thirds of the population were born elsewhere, and that females number only 507 to 1,000 males. In other words, the many immigrants mostly leave their women at home. Plague and its consequences explain the reduction of Bombay City by 6 per cent. to a total of 776,006, of whom only one-quarter were born there. In Madras, which is less important industrially, fewer than one-third of the population of 509,346 came from the outside. Among towns of under 100,000 that exhibit noteworthy growth are Peshawur, Jabalpur, Dacca, Multan, Sholápur, Haidarábád (Sind), Hubli, and Coconada.

The gross increase in the total population, allowing for new areas and better enumeration, was only 1.5 per cent.—a gain of 3.9 per cent. in British provinces being set off by a decline of 6.6 in native States. Burma and Assam have made great progress, but famine and plague caused a notable falling off in Bombay and the central provinces. Other provinces have also suffered considerably from the scarcities and the epidemics of disease that have left so black a mark on the decade. Plague alone probably claimed a million victims. Mortality from famine would have been greater but for the irrigation canals, which increased in mileage from 9,000 to 43,000 in the ten years, and now secure 30,000,000 acres from drought.

FETISH—ITS RELATION TO THE FAMILY.

BY

R. H. NASSAU, M.D., D.D.

In most tribes of the Bantu the unit in the constitution of the community is the Family, not the individual. However successful a man may be in trade, hunting, or any other means of gaining wealth, he cannot, even if he would, keep it all to himself. He must share with the Family, whose indolent members thus are supported by the more energetic or industrious. I often urged my civilized employees not to spend their wages immediately, almost on payday itself, in the purchase of things they really did not need. I represented that they should lay by "for a rainy day." But they said that if it was known that they had money laid up their relatives would give them no peace till they had almost compelled them to draw it and divide it with them. They all yielded to this,

the strong, the intelligent, the diligent—submitting to their Family, though they knew that their hard-earned pay was going to support weakness and heathenism and thriftlessness.

Not only financial rights, but all other individual rights and responsibilities, were absorbed by the superior right and duty of the Family. If an individual committed theft, murder, or any other crime, the offended party would, if convenient, lay hold of him for punishment. But only if it was convenient; to this plaintiff justice in the case was fully satisfied if any member of the offender's Family could be caught or killed. Or, if the offence was great, even any member of the offender's tribe.

Families recognized as proper and submitted to this custom; for Family was expected to stand by and assist and defend all its members, whether right or wrong. Each member knew that, and relied upon it, as escape from personal punishment or for help in his individual weakness or inability.

In getting a wife, for instance, no young man has saved up enough to buy one. His wages or other gains, year after year, beyond what he had squandered on himself, had been squandered on members of his Family. The Family, therefore, all contributed to the purchase of the wife. Though he henceforth owned her as his wife, the Family had claims on her for various services and work which neither he nor she could refuse.

If, in the course of time, he had accumulated other women, as a polygamist, and, subsequently becoming a Christian, was required to put away all but one (according to missionary rule), it was difficult for him to do so—not because of any special affection for the women involved in the dismissal, nor for pity of any hardship that might come to the women themselves. True, they would be a pecuniary loss to him; but his Christianity, if sincere, could accept that. And the dismissal of the extra women does not, in Africa, impose on them special shame, nor any hardship for self-support, as in some other countries. The real trouble would be that they are not his to dismiss unqualifiedly. The Family had a pecuniary claim on them; and the heathen members thereof are not willing to let them go free back to their people. If this man puts them away, he must give them to some man or men within the family pale, who probably already are polygamists. The property must be kept in the family inheritance. Thus, though attempting to escape from polygamy himself, this man would be a consenting party in fastening it on others. His offense before the Church, therefore, would still be the same.

For such concentrated interests as are represented in the Family there naturally would be fetishes to guard those interests, separate from the individual fetish with its purely personal importance. Respect for the Family fetish is cognate to the worship of the spirits of ancestors. Among the Barotse of South Africa, for this worship, "they have altars, in their huts, made of branches, on which they place human bones, but they have no images, pictures or idols."

Among the Mpongwe tribes of Western Equatorial Africa

The profound respect for aged persons, by a very natural operation of the mind, is turned into idolatrous regard for them when dead. It is not supposed that they are divested of their power and influence by death; but, on the contrary, they are raised to a higher and more powerful sphere of influence, and hence the natural disposition of the living, and especially those related to them in any way in this world, to look to them, and call upon them for aid in all the emergencies and trials of life. It is no uncommon thing to see large groups of men and women, in times of peril or distress, assembled along the brow of some commanding eminence, or along the skirts of some dense forest, calling in the most piteous and touching tones upon the spirits of their ancestors.

Images are used in the worship of ancestors, but they are seldom exposed to public view. They are kept in some secret corner, and the man who has them in charge, especially if they are intended to represent a father or predecessor in office; takes food and drink to them and a very small portion of almost anything that is gained in trade.

But a yet more prominent feature of this ancestral worship is to be found in the preservation and adoration of the bones of the dead, which may be fairly regarded as a species of *relic* worship. The skulls of distinguished persons are preserved with the utmost care, but always kept out of sight. I have known the head of a distinguished man to be dissevered from the body when it was but partly decomposed and suspended so as to drip upon a mass of chalk provided for the purpose. The brain is supposed to be the seat of wisdom, and the chalk absorbs this by being placed under the head during the process of decomposition. By applying this to the fore-heads of the living it is supposed they will imbibe the wisdom of the person whose brain has dripped upon the chalk.—(J. L. WILSON, "Western Africa," p. 393.)

In the Benga tribe, just north of the Equator, in West Africa, this Family fetish is known by the name of Yâkâ. It is a bundle of parts of the bodies of their dead. From time to time, as their relatives die, the first joints of their fingers and toes, especially including their nails, a small clipping from a lobe of the ear, and perhaps snippings of hair are added to it. But the chief constituents are the finger-ends. Nothing is taken from any internal organ of the body, as in the composition of other fetishes. The value of the Yâkâ seems to lie in a combination of whatever powers were possessed during their life by the dead, portions of whose bodies are contained in it. But even these are of use apparently only as an actual "medicine," the efficiency of the medicine depending on

the spirits of the Family dead being associated with those portions of their bodies. This efficiency is called into action by prayer and by the incantations of the doctor.

Around that doctor and his power is always a cloak of mystery, which I have not been able to solve entirely, and of which the natives themselves do not seem to have a clear understanding. The other factors in their fetish worship have to them a degree of clearness sufficient to make them able to give an intelligible explanation. It is plain, for instance, that the component parts of any fetish are looked upon by them as we look upon the drugs of our *Materia Medica*. It is plain, also, that these "drugs" are operative, not as ours by certain inherent chemical qualities, but by the presence of a spirit, to whom they are favourite media. And it is also clear that this spirit is induced to act by the pleasing enchantments of the magic doctor. But beyond this, what? Whence does the doctor get his influence? What is there in his prayer or incantation greater than the prayer, or drum, or song, or magic mirror of any other person? For, acknowledgedly, himself is subject to the spirits, and may be thwarted by some other more powerful spirit which, for the time being, is operated by some other doctor; or himself may be killed by the very spirit he is manipulating if he should incur its displeasure.

Belief in the necessity of having the doctor is implicit, the while that the explanation of his *modus operandi* is vague. And he is feared lest he employ his utilized spirit for revenge or other harmful purpose. A patient and his relatives who call in the services of any doctor are therefore careful to obey him, and avoid offending him in any way.

The Yâkâ is appealed to in Family emergencies. Suppose, for instance, that some one member has secretly done something wrong—*e. g.*, alone in the forest he has met and killed a member of another Family, or he has devastated a neighbour's plantation, or any other crime, and he is unknown to the community as the offender. But the powerful Yâkâ of the injured Family has brought disease, or death, or some other affliction on the offender's Family. They are dying or otherwise suffering, and they do not know the reason why. After the failure of ordinary medicine or personal fetishes to relieve, or heal, or prevent the continuance of the evil, the hidden Yâkâ is brought out by the chiefs of the offender's Family. A doctor is called in consultation; the Yâkâ is to be opened and its ancestral relic contents appealed to. At this point the fears of the offender overcome him and he privately calls aside

the doctor and the older members of the clan. He takes them to a quiet spot in the forest and confesses what he has done; taking them to the garden he had devastated, or to the spot where he had hidden the remains of the person he had killed. If this confession were made to the public, so that the injured Family became aware of it, his own life would be at stake; but, making it to his Yâkâ, and to only the doctor and chosen representatives of his Family, they are bound to keep his secret—the doctor on professional grounds and his relatives on the grounds of Family solidarity. The problem then is for the doctor to make what seems like an expiation. The explanation of this, as made to me, is vague. Whether the Yâkâ of the injured Family is to be appeased? Whether the offender's own Yâkâ is to be aroused from dormant inaction to efficient protection? Or both?

The Yâkâ bundle is solemnly opened by the doctor in the presence of the Family, a little of the dust of its foul contents is rubbed in the foreheads of the members present, a goat or sheep is killed and its blood sprinkled on them, the while they are audibly praying to the combined ancestor-power in the Yâkâ. These prayers are continued all the while the doctor is acting, who makes his incantations long and varied. The sanctifying redwood powder-ointment is rubbed over their bodies; and the Yâkâ-Spirit, having eaten the life-essence of the sacrificed animal, its flesh is eaten by the doctor and the Family. And some more nail-parings are added to the Yâkâ bundle. It is tied up again, and again is hidden away in one of their huts, care being taken to add to it from the body of their member who next dies. The curse that had fallen on them is supposed to be wiped out, and the affliction under which they were lying is believed to be removed.

Recently (1901) a Mpongwe man had gone as a trader into the Batanga interior. He was sick at the time of his going, one of his legs being swollen with an edematous affection, so much so that people in the interior, natives of that part of the country and fellow-traders, wondered that he should travel so far from his home in that condition. He said he was seeking, among different tribes, for the cure he had failed to obtain in his own tribe. Later on he died. He happened to die alone; while others who lived with him, one of them a relative, were temporarily out of the house. The suddenness of the death aroused the superstitious beliefs of that relative, and he rushed to the conclusion that it had occurred by Black Art machinations of some enemy. But of the whereabouts or the personality of that enemy he had not even a suspicion. He

cut from the dead man's body the first joints of his fingers and all the toe-nails, put them in the hollow of a horn, and closed its opening, intending to add its contents to his family Yâkâ when he should return to Gaboon. Then he waved the horn to and fro towards the spirits of the air, held it above his head, and struck it on the back of his own neck, uttering at the same time an imprecation that as had died his relative so might die that very day even as he had died the unknown enemy who had caused his death.

There is another Family "medicine," still used in some tribes, that was formerly held in reverence by the Banâkâ and Bapuku tribes of the Batanga country of the German Kamerun Colony. It was called Malanda. Some adult man having died and been buried, there were grounds for believing, under some superstitious fear, that witchcraft was being or would be exercised against the survivors. The grounds for this expectation of evil might be something apparently abnormal in the cause or manner of the death, or some untoward and inauspicious events immediately following the death. Whatever might be any one of the many possible grounds for such a fear, the chief men, six or eight as the case might be, of the Family involved would privately resolve to have Malanda made for all its members. Calling the able-bodied male members together, they would spend about two weeks in building a house, in the jungle adjoining the village, of a size large enough to contain from twenty to fifty persons, according to the number of their lads and young men. This shed would be without doors or windows, one gable being left entirely open. The young people who assisted in building it were not allowed to know the object of it. When completed, secretly, at night, their chief men would dig up the now rotting corpse and carry it to the shed.

During the erection of the shed other men had been employed in carving an image of a male figure. Cavities were gouged in the sockets of the eyes; two teeth were extracted from the corpse, and they were embedded with resin in those cavities and hidden by a small piece of glass stuck also with resin where the eyeball should be. [Glass has been imported into Africa for hundreds of years in small mirrors, tumblers, and other glassware.] The image was set up in the shed, standing on a large basket made of a bark resembling birch. Immediately on the disinterring of the corpse the head was cut off, and the brains (a most valuable "medicine") were mixed with chalk, the powdered bark or wood of the redwood tree, and the ashes of other plants. The headless corpse was

tied up in a standing position against one of the walls, being held in place by cross pieces of wood.

In the morning the elders announced to the Family, "Malanda has come!" this word being applied to either the disinterred corpse itself, or the "medicine" to be made from it, or the ceremonies about to be performed with it.

Men then went into the forest, cut down any large tree, and carried its trunk into the village when the sun was well risen, about the altitude of 8 A.M. Then the young men and lads were summoned, and were ordered to sit on the log motionless, their heads thrown far back and their open eyes, to gaze at the sun. In this painful position they were to keep their eyes, fixed on the sun as it continued to rise toward the zenith, and to keep up their stare at its blinding light and heat, still motionless and speechless. When exhausted, or actually fainting, they fell back off the log; they were seized and blindfolded and carried or made to walk to the shed. (Previous to this they had not been allowed to see what was in the shed, nor did they know what was there.) Arrived at the shed, still blindfolded, they were severely beaten by the old men.

And then the bandage was suddenly removed from their eyes, and there were revealed to their sight the image with its staring glass eyes and the rotting headless corpse standing with its extended arms. If, terrified at this horrid exhibition, they attempted to flee, they were seized and again severely beaten.

All being finally reduced to abject submission, they were then questioned, each one in turn, whether they had witchcraft in them ("O na Jemba!"). Some denied; others actually admitted that they had. If the denial was satisfactory, some of the brain mixture was rubbed longitudinally on their breasts; if they admitted, the "medicine" was rubbed across their breasts horizontally. A pit and tunnel were dug in the foot of the shed, where the corpse was put by the priest-doctor and others. Later this corpse was brought back and cut in half longitudinally. These two pieces were laid on the floor parallel to each other and a few feet apart. The young people were taken in two companies to the two sides of the shed opposite to the remains, and were made to advance toward each other, stepping over the remains, and then standing together in the centre space, were taught a terrible oath of secrecy (a tradition of the ancient Covenant Oath over a divided heifer?). The remains were then disarticulated, and the bones (most of the decomposed flesh having fallen away from them) were put into the bark baskets; its cover was closed down, and the image placed on top of it. This

entire process, with all its attendant incantations—anointing of the bodies of the youth, the imparting of instructions, and directions of what to do or not to do, with jugglery of the doctor—would take as many as twenty days. Those young people all that time were kept prisoners in that shed, eating and sleeping in proximity to the corpse of their relative. No females were allowed to enter the shed or witness any of the ceremonies there performed.

Then the entire company adjourned to the street of the village, carrying with them the basket and its foul contents, and the image. Around this, in the street, they danced, and sang, and prayed, during which exercises some man would parade before them, bending low toward the basket and its image, and then suddenly erecting himself, and stepping high as he walked, to the time of the drum, and heavily aspirating as he brought down each foot "Hah! hah!" These ceremonies and rites all completed, the basket and image were placed in a dark room in the house of their chief man, who often set before it sacrifice of a plate of food, or tied to the body of the image pieces of cloth or other offerings. The image, with its glass eyes, by virtue of the hidden teeth, and the bones over which it was standing, could see the approach of evil-minded persons coming against any member of the Family, and would seize and kill them or drive them away.

Another "medicine" similar to the Yâkâ in its Family interest is called by the Balimba people living north of Batanga, Ekofî. The following statement is made to me by intelligent Batanga people who know the parties and who believe that what they report actually occurred. A certain man named Elesa procured a small but powerful bundle of the Ekofî "medicine." His brother-in-law one day asked for the loan of it, that he might use it for purposes of his own.

Elesa refused, telling him that as they belonged to different families he would not know how to manage it, and could accomplish nothing with it. And Elesa went off hunting in the forest. During his absence the brother-in-law foolishly determined to possess himself of the Ekofî. Trying several keys in a chest in Elesa's house where he supposed the "medicine" was hidden, one fitted and turned the key. The lid of the chest flew open, and out jumped the Ekofî, followed by the contents of the chest—cloth, hats, coats, and a variety of other goods. He was delighted, and was about to stoop and gather up the goods and run away with them. To his astonishment, he found he could not move. He was held by an invisible force. Elesa, off in the forest, was enabled

by the Ekoñi to see all this, and he hastened back to his house, and saw his brother-in-law standing, rooted to the spot. He took a chair quietly from the room, and, sitting in the doorway, said, "Now, brother-in-law, you have seen my Ekofii; I will not release you from that spot till you give up your wife and all you ever paid for her." The brother-in-law offered his father instead of his wife. But Elesa refused. The father also possessed an Ekoñi, which enabled him to see and hear what was going on. Seizing his spear, he hastened to the house and rebuked Elesa for his hard terms, and offered instead one thousand German marks (\$250). These were accepted. Elesa picked up his Ekofii and put it back in the chest, followed by the goods that had been scattered on the floor. And instantly the brother-in-law felt his legs free to move. This was gravely told me by my cook, a member of the Roman Catholic Church, and was endorsed by a woman of my own Church who was present during the recital.

My friend the late Miss Mary H. Kingsley, on page 273 of her "Travels in West Africa," mentions an incident which shows that she had discovered one of these Yâkâ bundles (though, apparently, she did not know of it as such, and suspected it to be a relic of cannibalism. It is true, however, that she did come in contact with cannibalism.) She had been given lodging in a room of a house in a Fang village, in the country lying between the Azingo branch of the Ogowe River and the Rëmbwe branch of the Gaboon River. On retiring at night she had observed some small bags suspended from the wall.

Waking up again, I noticed the smell in the hut was violent, from being shut up, I suppose, and it had an unmistakably organic origin. Knocking the end off the smouldering bush-light that lay burning on the floor, I investigated, and tracked it to those bags; so I took down the biggest one, and carefully noted exactly how the tie-tie (rattan rope) had been put around its mouth; for these things are important, and often mean a lot. I then shook its contents out in my hat, for fear of losing anything of value. They were a human hand, three big toes, four eyes, two ears, and other portions of the human frame. The hand was fresh, the others only so-so, and shrivelled. Replacing them, I tied the bag up, and hung it up again.

It was well she noticed a peculiarity in the tying of the calamus-palm string or "tie-tie." A stranger would not have been put in that room of whose honesty or honour there was doubt. White visitors are implicitly trusted that they will neither steal nor desecrate.

Another Family-medicine in the Batanga region is known by the name of Mbatî. An account of the mode of its use was given me by a Batanga man as occurring in his own lifetime with his own father. The father was a heathen and a polygamist, having several wives,

by each of whom he had children. One day he went hunting in the forest. He observed a dark object crouching among the cassava bushes on the edge of a plantation. Assuming that it was a wild beast wasting the cassava plants, he fired, and was frightened by a woman's outcry, "Oh! I am killed!" She was his own niece, who had been stooping down, hidden among the bushes as she was weeding the garden. He helped her to their village, where she died. She made no accusation. The blood shed being in their own family, no restitution was required nor any investigation made. And the matter would have passed without further comment had not, within a year, a number of his young children died in succession; and it began to be whispered that perhaps the murdered woman's spirit was revenging itself, or perhaps some other family was using witchcraft against them. A general council of adjacent families was called. After discussion it was agreed that the other families were without blame; that the trouble rested with my informant's father's own family, which should settle the difficulty as they saw best, by inflicting on the father some punishment or by propitiation being made by the entire family. The latter was decided on by the doctors. They gathered from the forest a quantity of barks of trees, leaves of parasitic ferns, which were boiled in a very large kettle along with human excrement and a certain rare variety of plantain, as small as the smallest variety of banana. To each member of the family present, old and young, male and female, were given two of these unripe plantains. The rind does not readily peel off from unripe plantains and bananas; a knife is generally used. But for this "medicine" the rinds were to be picked off only by the finger-nails of those handling them, and then were to be shredded into the kettle in small pieces, also only by their finger-nails. A goat or sheep was killed, and its blood also mixed in. This mass was thoroughly boiled. Then the doctor took a short bush having many small branches (a tradition of hyssop?), and, dipping it into the decoction, he frequently and thoroughly sprinkled all the members of the family, saying, "Let the displeasure of the Spirit for the death of that woman, or any other guilt of any hidden or unknown crime, be removed!" The liquid portion of the contents of the kettle having been used up in the propitiatory sprinkling, the more solid pottage-like débris were then eaten by all members of the family as a preventive of possible danger. And the rite was closed with the usual drum, dance, and song. My informant told me that at that time, and taking part in the ceremonies, was his own mother, who was then pregnant with

him. The Mbati "medicine" seems to have been considered efficient, for he, the seventh child, survived; and subsequently three others were born. The previous six had all died.

Though two of those three have since died, in some way they were considered to have died by Njambi (Providence)—i.e., a natural death. For it is not unqualifiedly true that all tribes of Africa regard all deaths as caused by Black Art. There are some deaths that are admitted to be by call of God, and for these there is no witchcraft investigation.

The father also is dead. My informant and one sister survive. They think the Mbati "medicine" was satisfactory, notwithstanding that the sister believes that their father was secretly poisoned by his cousins, they being jealous of his affluence in wives and children.

The last step in the Mbati rite is the transplanting of some plant. A suitable hole having been dug at one end, or even in the middle of the village street, each person takes a bulb of lily kind, probably a crinum or an amaryllis, such as are common on the rocky edges of streams, and pressing it against their backs and other parts of their body, and with a rhythmic swaying of their bodies, they plant it in that hole. Thereafter these plants are not destroyed. They are guarded from the village goats by a small enclosure. And should at any time the village remove, the plants are also removed, and replanted on the new site. Such plants are seen in almost every village.

GEOGRAPHICAL RECORD.

AMERICA.

ARTESIAN WATER FROM MORAINE.—Recent exploration for artesian water to supply the City of Ithaca, the seat of Cornell University, has resulted in not a little contribution to our knowledge of the deposits underlying that city and of the mode of occurrence of ground waters in the Pleistocene deposits. The city lies on a flat, at the head of Cayuga Lake, and just southwest of the town thirteen wells have been bored. Several of these supply 300,000 gallons a day, the water flowing to the surface without pumping. The rock bottom of the valley, at least here, is 430 feet below the surface, the overlying strata being two zones of lake clay separated by a gravel stratum 20-70 feet thick at a depth of about 80 feet,

all resting on a series of gravel, clay, and sand whose top is of irregular outline. Here scratched stones were found and in places there is unquestionably till. There is also fine black sand, 50-75% quartz, which is generally water-bearing. Professor Tarr (Journ. Geol., Vol. XII, No. 2, 1904, 69-82) interprets this lower gravelly series as moraine buried by the lake deposits. Two miles south of the wells the valley is choked with moraine accumulations, which disappear under the delta. From this point kame-moraine hills extend south to the divide, over a dozen miles. This sandy area serves as a gathering-ground for waters which slowly percolate beneath the lake deposits, having head enough at Ithaca to rise over 300 feet. The wells show little sympathy in pressure and volume, and have a constant temperature of 52° in August and in December. Professor Tarr believes the source of the water in the higher (20-70 foot) gravels to be the alluvial fans opposite the mouths of the streams that enter the valley on the great level at the foot of the lake.

L. M.

SUBTERRANEAN SHORE-LINES.—The outline of glacial Lake Iroquois has long been pretty thoroughly established by observations of elevated shore-lines, the same phenomena being one of the classical evidences of tilting of the land in the East since the retreat of the ice-sheet. The extensive studies and observations of Dr. G. K. Gilbert as to the amount of tilting find curious corroboration in the paper of Tarr (Journ. Geol., Vol. XII, No. 2, 1904, 69-82), who writes of what may be described as subterranean shore-lines at the head of Cayuga Lake.

In the boring of some artesian wells through the delta on which Ithaca stands a recurring succession of strata was passed through in all the wells, thirteen in number. Roughly this was first clay, then gravel and sand, clay again, and once more sand and gravel. This last deposit was almost directly on bed-rock at a depth of 280-340 feet, and was generally water-bearing. In seeking an explanation for the upper sand-gravel layer of 20-70 feet, sandwiched between clays, the lower about 130 feet thick, the upper 40-60 feet thick, Professor Tarr had recourse to the well-established tilting of this region since the Iroquois stage. The beaches of Lake Iroquois disappear below lake level at Union Springs, on Lake Cayuga, twenty-nine miles north of these wells. Up to that point they are dipping, as observations by Dr. Gilbert show, about 2.7 feet per mile. Consequently the beach should be 78 feet below present lake-level at Ithaca. It is at just about this depth and

below it that the sandy deposits are passed through. If the conclusion that these coarse sands and gravels are identical with the ancient lake shore were not then irresistible, the additional evidence of plant and of animal life in the series would furnish corroborative evidence of indisputable character. Logs in seven of the wells at this horizon and not lower, and molluscan remains identified as near-shore species, are the witnesses. Tilting, however, went on faster than sand and gravel deposits were made, lake conditions were renewed, and the upper series of clays on which modern Ithaca stands was deposited.

L. M.

REJUVENATION A PRODUCER OF HANGING VALLEYS.—The difficulty of reading aright the drainage history of the Finger Lake region of Central New York is well instanced by the case of Professor Tarr, who, ten years ago, interpreted Lake Cayuga as rock basin (Bull. Geol. Soc. Amer., Vol. V, 1894, 339-356), but whose later studies have revealed many facts opposed to the glacial erosion hypothesis. He has, therefore, turned to rejuvenation as an alternative hypothesis. In the American Geologist (Vol. XXXIII, No. 5, 1904, pp. 271-291) he reviews the earlier work, states the distribution of the older gorges (buried gorge valleys in the bottoms of mature hanging valleys of the upland), and proposes for consideration the following hypothesis:

The region of the Finger Lakes, having attained a condition of topographic maturity, represented by the hanging valleys, and by the gentle slopes of the main walls above the 800-foot contour, was subjected to rejuvenation. The main valleys, with their elevation above base-level decidedly increased and the power of their streams possibly further increased by tilting, were transformed below the 800-foot contour to broad, deep gorges, whose bottoms were cut to levels below present sea-levels. The side valleys, always behind the main valleys in stage of development, were, moreover, occupied by smaller and weaker streams, which, in the majority of cases, were either only slightly or even adversely affected by the tilting. These weaker members of the stream systems were unable to do more than cut the gorges which are so generally present in the bottoms of the hanging valleys. On this theory a moderate amount of glacial erosion is, of course, allowed, possibly deepening the valleys somewhat, and certainly broadening them by erosion on the sides, and, in favorable situations, even partially erasing the older gorges.

L. M.

COMMERCIAL GEOGRAPHY IN THE UNIVERSITY OF WISCONSIN.—The University of Wisconsin celebrated, at the end of the school year this summer, the first half century of its existence. A business course was opened to students at the beginning of the academic year 1900-1, to supply facilities for the training of young men who desire to enter upon commercial careers. This course has been

successful from the first, and the number of students in it has steadily increased. It opened with eighty-five students, and the number enrolled in the past year was 173. Commercial and economic geography is a prominent feature of the sophomore year. It embraces a general survey of the resources, industries, and commerce of the chief countries of the world, followed by a special study of the production and distribution of the staple articles of commerce, with special reference to the foreign trade of the United States. Dr. Henry C. Taylor is the instructor in this branch of the course.

THE TAMPICO HARBOUR WORKS.—E. L. Corthell, C. E., who had charge of the construction of the Tampico harbour works, has written a paper to supply visitors at the St. Louis Exposition with a résumé of the salient features of the works and to explain the models and photographs on exhibition. Tampico stands on the Pánuco River, near its mouth, about midway between Vera Cruz and the United States frontier. Before the present works were completed the commercial history of the port was a record of continual danger, loss, and disaster. The bar at the mouth of the river was variable in position, depth of water, and location of channel. At its best there was sufficient depth over the bar only for lighters and tugs which attempted, at great disadvantage, to carry freight and passengers to and from the steamers and ships anchored outside in the Gulf. The bar was exposed to the full force of the "northerns," whose velocity is from 40 to 75 miles per hour. Vessels sometimes waited for weeks, or even months, and were finally obliged to weigh anchor and go on to other ports because their freight and passengers could not be handled at Tampico.

The improvement consists of parallel jetties through the bar and straight out into the sea, the north jetty being 6,500 and the south jetty 6,800 feet in length. The distance between them is 1,000 feet. The total cost of the construction was about \$2,221,000. The channel has been deepened, and the current flowing between the jetties carries the sediment out into the Gulf beyond the harbour works. The commerce of the port has been greatly stimulated by the improvement.

DISPOSITION OF RAINFALL IN THE BASIN OF THE CHAGRES.—Gen. Henry L. Abbot, who has made a very careful study of the engineering problems in connection with the Panama Canal, and especially of everything that concerns the rainfall, points out in a

recent paper (*Monthly Weather Review*, XXXII, 1904, No. 2) that the Isthmus of Panama is a singularly favourable locality for studying the disposition of the rainfall—*i. e.*, the part that flows off in the streams, the part that is evaporated, the part that is absorbed by plants, and, finally, the part that sinks into the earth as ground-water. Ice and snow are unknown on the Isthmus. The region is, in its natural condition, densely covered with tropical vegetation. The temperature is very uniform, thus removing the difficulty of varying amounts of evaporation as dependent on varying temperatures. And, lastly, the rainfall is very heavy, with sharp divisions between the dry season and the rainy season. All these conditions have been extremely favourable to the prosecution of the study in hand, and General Abbot believes it "not improbable that results obtained under so favourable conditions may not only be applicable to similar regions in the tropics, but may also throw light upon certain climatic elements common to more northern latitudes." Of the entire rainfall which falls above Bohio, about a third disappears, a second third flows off directly by the channel of the Chagres, and the last third ultimately reaches the bed of the river, after a retardation of about three months, by its passage through the soil. In round numbers, the valley of the Chagres River has about 2.5 times the rainfall, 3.3 times the outflow, and 1.5 times the evaporation which characterizes the northeastern portion of the United States. The ground-water also plays a much more important part in the regimen of the stream than it does with us.

R. DEC. W.

DOMINICA'S BOILING LAKE.—The *Dominican*, published at Roseau, Dominica, has printed a paper by Mr. F. Stearns-Fadelle on the boiling lake of that island. It was unknown until 1875, when a gentleman who had lost his way in the forest approached the lake near enough to be aware that he was in the neighbourhood of a centre of subterranean ebullitions. His report led a party to go in search of it. The search was rewarded by the discovery of the lake, which is elliptical in form, about 200 by 100 feet in measurement, and stands 2,425 feet above sea-level, in the midst of a volcanic area some five square miles in extent. When fullest it drains into the Pointe Mulâtre stream. At times it is quiescent, and then it may be ebullient for days at a time. It has not yet been ascertained whether ebullition occurs at definite periods. Vertical cliffs of ferruginous soil and rock rise from the water, and in sounding ten feet from the edge of the lake no bottom was found at a depth of 195 feet. Sulphuretted hydrogen is exhaled at intervals, and the

gas proved fatal to a visitor and guide in 1901; while other visitors have suffered from its effect. When the water is quiescent it is still a lake, showing that this is not merely the outer part of a subterranean funnel. The volcanic region in which it is situated is called Grande Soufrière.

THE SAILING SHIP AND THE PANAMA CANAL.—Mr. James Page, of the United States Hydrographic Office, contributes an important paper under the above title to the *National Geographic Magazine* for April, 1904, emphasizing the fact that the sailing vessel is not a thing of the past, and that our increasing knowledge of marine meteorology is constantly tending towards greater security, quicker passages, and larger profits for sailing ships. Thus, for example, during the early '70's the average voyage from The Lizard to Valparaiso took over 100 days; in 1876-1880, 18 passages averaged 102 days; in 1881-1884, 38 passages averaged 91 days; in 1885-1888, 64 passages averaged 88 days; in 1889-1892, 83 passages averaged 83 days. With regard to the use of the Panama Canal by sailing ships, Mr. Page points out that the northeast trades blow home to the Caribbean coast throughout practically the entire year. During the months January-April (the dry season) they are strongest, and during this season the dreaded "northerns" occur along the eastern coast of Central America. Steamers calling at Colon at that time always keep up steam, that they may be able to slip their cables and put to sea at a moment's notice. The trades weaken during the advance of the wet season and incline to the southeast, and during August and September there are brief periods with southwest winds, these being the terrestrial monsoons from the Pacific side of the Isthmus. While a sailing vessel approaching the Atlantic end of the canal will thus have favourable winds, a vessel leaving that end will be unable to steer a direct course against the trades, and must make a detour. This will not be a serious thing for vessels bound to European or American ports, but for those bound from Puget Sound to South Africa, for example, the passage by way of Cape Horn will be better. It is probable that a vessel of large tonnage would experience a very considerable delay in beating from Colon to Cape San Antonio during the winter months, when the trades are fresh and northerly, or even northwesterly, along the coast. On the whole, the difficulty at the Atlantic end of the canal will come chiefly through superabundance of wind; while at the Pacific end the difficulties will be associated with calms. This region is one of very uniform pressure; hence the

gradients are weak, and calms prevail. The "Mexican belt of calms," as it is known, is triangular in shape, the base being at the American coast, extending from the Gulf of California to the Gulf of Panama, and the vertex being in the Pacific, at about long. 125° W. The axis of this belt of calms moves slightly north and south with the seasons, and the frequency of calms increases rapidly towards the coast. Sailing vessels approaching and leaving the Pacific end of the canal must cross more or less of this belt, and the delay likely to arise from this cause must be balanced against the saving of time which would come because of passage through the canal.

The sailing routes which are most likely to be affected by the canal, if the latter is practicable for sailing vessels, are the route between the English Channel and the west coast of North America and the homeward route from the west coast of South America. Vessels going out to the west coast of South America will continue to sail by way of Cape Horn, because, if bound to Chile or Peru, such vessels would have to make a wide detour in the Pacific after leaving Panama in order to circumnavigate the southeast trades. As to the time likely to be saved by sailing vessels which pass through the canal, it is found that the average time from the Channel to San Francisco by way of the Cape is 139 days, and by way of the canal it would be 97 days, or a net saving of 42 days. On the return voyage the average time from San Francisco to the Channel, allowing delays in the calm-belt on the Panama side and for the detour on the Atlantic side, would be 117 days, giving a net saving of 15 days as compared with the Horn passage. The use of the canal by small coasting vessels between San Francisco to New York might possibly revive the coastwise trade between our Atlantic and Pacific ports, as the sailing time from New York to San Francisco *via* the canal would be 74 days, and returning 85 days, as against 140 and 130 days by way of the Horn.

R. DEC. W.

EUROPE.

RUMANIA NOT A PART OF THE BALKAN PENINSULA.—The Rumania Geographical Society has addressed a Memorial to the geographical societies of other countries and to foreign cartographic establishments, asking attention to the scientific grounds upon which Rumanians object to the inclusion of their land on atlas sheets as a part of the Balkan Peninsula. On March 13 last, at a meeting of the Society, over which King Charles I. presided, Mr. Alexander A. Sturdza read an able and forceful paper, present-

ing the reasons why Rumania neither in geological structure, in race, nor in political condition is a part of the Balkan Peninsula. At the request of the King this paper was incorporated with the Memorial, and the whole is being distributed in the French language under the title "La Roumanie N'Appartient pas à la Péninsule Balkanique."

The argument and scientific data accompanying the Memorial are detailed and comprehensive. Briefly, from a geological and geographical point of view, it is shown that the Carpathian ranges which dominate the Rumanian plains are much younger than the Balkan Mountains, and are a part of the Alpine system; while the Balkans were once the western portion of a mountain system extending through the Crimea to the Caucasus. The formation of the Danube Valley, about the close of the Tertiary epoch, by the rupturing of the rocks at the Iron Gates, gave birth to a distinct line of geographical demarcation between Rumania and the Balkans. Mr. Sturdza describes how the relief, the hydrographic system, and the soils of Rumania differentiate that country from the Balkan lands. The low plains of Rumania spread away on the north side of the Danube; while the terraces of Bulgaria rise to the Balkans on the south. The climatology of Rumania is not affected in any way by the Balkan ranges, but is under the influence of the Carpathians and the Danube.

It is suggested, from an ethnological point of view, that there is absolutely no ethnic resemblance between the Rumanians and the Turks, Servians, and Bulgarians. The early basis of the Rumanian people, Pelasgian-Iranian-Thracian, was later greatly modified by Roman and Dacian elements; but the Balkan peoples, excepting the Greeks and the Albanians, belong, in their origin, to the Mongol Asiatics, with whom the Rumanians have no ethnic affinities. Tables of anthropological measurements and other data are also given to show important physical differences between the Rumanian and Balkan peoples, establishing a line of separation between them.

Many facts are adduced to show that the mentality of the Rumanians and their psychological tendencies differentiate them in a marked degree from the Balkan peoples. The Rumanians more nearly approach the western nations of Europe, in intellectual culture and civilization, than their Balkan neighbours. The legislation of Rumania and the manners and customs of its society are Western; the State is independent, and ranks in the civilized world as a factor promoting peace and order, progress and liberty.

From the array of facts adduced it is argued that the Danube should be regarded as the boundary between Rumania and the Balkans, or that the boundary should be fixed further south along the line of the most northern of the Balkan ranges.

There is no doubt that such considerations as Mr. Sturdza has adduced have long inclined many geographers to regard the Rumanian plains as a geographical unit apart from the regions on the south side of the Danube. This has been noticeable in authoritative writings. Dr. Philippson, for example, calls Rumania a Danubian State, and differentiates it from the Balkan Peninsula to the south of the Danube. The Stieler four-sheet map of the Balkan Peninsula, however, still includes Rumania as a part of it.*

A PHYSICAL GEOGRAPHY OBSERVATORY ON MONTE ROSA.—Upon the initiative of the Swiss Alpine Club, with the assistance of Margherita, the Dowager Queen of Italy, the Duke of the Abruzzi, and the Italian Ministry of Agriculture, an observatory of physical geography will be built this summer on Monte Rosa at an elevation of 4,560 metres. This and the well-known observatory of Joseph and Henri Vallot on Mont Blanc will be the highest station of the kind in Europe. The station will be in charge of a young scientist, who will keep the observatory open during the summer, and even in winter, if the weather permits. The special purpose will be to co-operate with meteorological studies at high altitudes by means of balloons. There are now in Italy two observatories at high altitudes—one on Mount Etna (2,942 metres) and the other on Monte Cimone in the Apennines (2,162 metres).

THE SOILS OF RUSSIA-IN-EUROPE.—The Russian Department of Agriculture has published a new map of the soils of Russia, and the information it contains is summarized in *Annales de Géographie* (No. 69, 1904). These soils may be briefly summarized as (1)

* It is not quite clear what geographers are expected to do in this matter. The term *Balkan Peninsula* is a convenient geographical expression, which carries with it neither praise nor blame, and those who use it will read Mr. Sturdza's argument with surprise. He succeeds in proving to his own satisfaction by the evidence of geology and meteorology, of history and ethnology, that Rumania and the Rumanians have nothing in common with the Balkan Peninsula.

This being the case, there seems to be no reason for asking the opinion of Societies and Institutes. Rumania is known by its own name in the political world and on the map of Europe. What more is needed?

It may be well, however, to remind Mr. Sturdza that his tone of affected disdain for the peoples confessedly included in the Balkan Peninsula does not recommend the advanced intellectual culture which he claims for Rumania.—EDITOR BULLETIN.

those of the dry steppes, gray and brown in color, formed of clays and sand; (2) the soils of the *tchernoziom* (black earth), the great wheat region of Russia, with grassy steppes and prairies, and a more or less temperate and humid climate, sandy or marly, with a large but variable admixture of humus; (3) the soils of the forest steppes, resembling the *tchernoziom* soils in their content of humus, but distinguished from them by the acidity of the sub-soil; (4) the soils of the mixed forests, with grass and much undergrowth, chiefly formed by the disintegration of quartz; and (5) the soils of the tundras, formed of clay and sand, the perpetually-frozen soils of the north.

AFRICA.

BOUNDARY BETWEEN GERMAN EAST AFRICA AND THE CONGO FREE STATE.—*Globus* (April 28) says that the Congo State authorities have been unsuccessful in their effort to have Lake Kivu declared to be wholly within the territory of the State. The Congo-German Boundary Commission has discovered an error of about 17' in the mapping of the southern end of the lake, and the rectification of the frontier shows that the boundary follows the Russisi River, thus dividing the lake about equally between German East Africa and the Congo Free State. The volcanic mountains to the north of the lake are also partly in Belgian and partly in German territory.

CAPTAIN LENFANT'S BOAT JOURNEY FROM THE ATLANTIC TO LAKE CHAD.—*La Géographie* for June publishes a long paper by Capt. Lenfant on his recent successful journey. The *Scottish Geographical Magazine* was permitted, in advance, to make an extended abstract of the paper, which appears in its June number. The object of the mission was to reach Lake Chad by boat, *via* the Niger, the Benue, and the Mayo-Kebbi of the Niger system and the Logone and Shari of the Lake Chad system. A special steel boat was built, drawing only two feet when loaded. It could be taken to pieces for transportation past obstructions in the waterways.

The journey began at the mouth of the Niger and led up the Benue, which, in winter, is accessible to large vessels as far as Yola. Although fertile, the banks of the Benue are sparsely inhabited, villages being rarely met on its lower course. On Aug. 28, 1903, twenty-four days after leaving the Atlantic, the party reached the confluence of the Mayo-Kebbi with the Benue.

It had long been reported that at the period of high water the Logone, affluent of the Shari or Lake Chad system, was connected with the Mayo-Kebbi or Niger system through the Tuburi depression, which stands on the water-parting between these two great river systems. The purpose of the mission was to ascertain whether this was a fact, and, if so, whether the water route, Niger-Benue-Kebbe-Tuburi-Chad, might practically be utilized. The mission succeeded in proving that this water connection exists, and that it may be utilized to some extent for transportation.

Lenfant found six feet of water everywhere in the Kebbi, with no rocks or other obstacles to navigation, until he arrived at the village of Lata. Here a fall 30 metres in height, above which are rapids, blocked his way. He accordingly had before him 30 kilometres of land portage. His boat and supplies were carried around the obstruction, and the boat was launched again in the Tuburi depression, whence Lenfant made his way without difficulty into the Logone and on to the Shari and Lake Chad. On Nov. 4 his vessel anchored before Fort Lamy, near Lake Chad, where his compatriots gave the party a most cordial reception.

He had proved that there is only one obstruction in the way of continuous navigation between the Atlantic and Lake Chad, and that for several weeks of each year the waters of the Chad system reach the Ocean.

He has pointed out the existence of a new road that for eight to twelve weeks, between Aug. 1 and the end of October, may be utilized for the transportation of supplies to Lake Chad. He has solved the geographical problem, but does not claim to have made the exhaustive studies required to work out the details of its utilization. The new route would be perfect were it not for the falls at Lata. As it is, freight from France will require only two unloadings to reach Lake Chad—the first at the mouth of the Niger and the second at Lata for the short portage to Sulkano in the Tuburi depression.

ASIA.

POPULATION OF THE PHILIPPINES.—Bulletin I of the Bureau of the Census, 1904, gives the result of the census in the Philippine Islands taken in 1903. The archipelago numbers approximately 3,141 islands and islets extending from latitude $4^{\circ} 40'$ to $21^{\circ} 10'$ N. and from longitude $116^{\circ} 40'$ to $126^{\circ} 34'$ East. Within this area of 832,968 square miles of land and water dwells a population of 7,635,426 people. Of this number, 6,987,686 are civilized, or partly

so; while 647,740 are wild and uncivilized, although not without some knowledge of the domestic arts.

The aborigines of the Philippines are believed to be the Negritos, and of these 23,000 still remain. They are found in many, although not all, of the provinces living in a primitive state. They are very short, the males averaging about 4 feet 10 inches in height; while the females are shorter.

Of the other wild tribes, the most important are the Igorot, who inhabit the central cordillera from the extreme north of Luzon south to the plains of Pangasinán and Nueva Ecija; a curious tribe of head hunters known as the Ibilao, also in Luzon; two tribes in Paragua, one in Mindoro and 17 in Mindanao; and the Moros and other Mohammedan tribes of the south.

Considering the land alone, the area is estimated to be 115,026 square miles, or 73,616,640 acres. Of this, about 12,000,000 are private and over 61,000,000 public lands. Of the latter, 40,000,000 acres or more are forest lands, leaving about 21,000,000 available for agriculture. The forest lands are estimated to be worth more than \$2,000,000,000.

The civilized Filipinos are classified in eight tribes, as follows: The Bicol, Cagayan, Ilocano, Pampangan, Pangasinán, Tagalog, Visayan, and Zambalan. The largest is the Visayan.

The population of the more important islands, classified as civilized and wild, is as follows:

ISLAND.	TOTAL POPULATION.	CIVILIZED.	WILD.
Basilan	27,017	1,206	25,811
Bohol	243,148	243,148
Camiguin	30,754	30,754
Catanduanes ..	39,288	39,288
Cebú	592,247	592,247
Joló	44,718	1,270	43,448
Leyte	357,641	357,641
Luzon	3,798,507	3,575,001	223,506
Marinduque	50,601	50,601
Masbate	29,451	29,451
Mindanao	499,634	246,604	252,940
Mindoro	28,361	21,097	7,264
Negros	460,776	439,559	21,217
Panay	743,646	728,713	14,933
Samar	222,690	222,002	688
Siquijor	46,023	46,023
Tablas	24,648	24,648

CHINESE TREATY PORTS.—The *Monatsschrift für den Orient* for April prints the list of treaty ports opened to the world's trade by China between 1843, and March, 1904. The treaty ports now number 43. Before 1843, European nations were able to engage in trade with China by sea only through the port of Canton and by land through the caravan route which crosses Mongolia and enters Siberia at Kiachta. The first port to be opened was Shanghai in May, 1843. The latest ports to be opened to trade are Antung, near the mouth of the Yalu, and Nanning, in the southern part of the province of Kwangsi. The list now published gives the date of the opening of each port, its population, and the approximate amount of its trade in 1902.

ELECTRIC STREET CARS IN TIENTSIN.—The Compagnie Internationale d'Orient has obtained from the Chinese Government the right to introduce electric street railroads and electric lighting in Tientsin. This will be the first enterprise of the kind in China, and it is expected that the success of the Belgian company in securing this concession will encourage efforts in the same direction in other large Chinese cities. The population of Tien-tsin is estimated at 1,000,000, and it is second only to Canton in size. It has, however, only the most rudimentary means of passenger transportation. The Japanese *jinrikishas* were introduced about thirty years ago, and at present over 2,500 of these vehicles pay a license of \$1 a month each, and render much service to foreigners and the well-to-do Chinese. The prices charged for their use, however, are far above the means of the masses. It is intended that the electric street cars shall supply a means of urban transport at once convenient, rapid, and cheap.

POLAR.

THE FATE OF BARON TOLL.—Prince Kropotkin has translated for the *Geographical Journal* (June, 1904) all that the Russian papers have printed concerning the search for Baron Toll. He says that engineer Brusneff, who visited Bennett Island with Lieutenant Kolchak's party, is of the opinion that Baron Toll must have perished on his return journey from Bennett Island to New Siberia. The island is 93 miles from New Siberia. The explorer probably met with an open sea which it was impossible to cross in the dark and cold season, when floating ice was forming. Toll had provisions for only a fortnight, and the party must have suffered severely for want of warm clothing. Having killed on Bennett Island only six

reindeer, they could not have prepared enough clothing for the four men, and they could not winter on the island, as they had no provisions for that, and would have had no fuel.

The last paper written by Baron Toll and found on Bennett Island was dated November 8, 1902, and contains briefly the important geographical results of his visit to that place. His remarks on the geographical work done there are of the greatest value. Here is a translation of the paper, a part of which, in the form of a cable summary, appeared in the April number of the *BULLETIN* (p. 239):

In company with the astronomer, F. G. Seeberg, and two hunters, the Tungus Nicholas Diakonoff and the Yakut Vassili Gorokhoff, on June 7 [June 20], I left the winter harbour of the Zarya (Nerpichiya Bay or Kotelnyi Island). We followed the northern coasts of Kotelnyi and Thadéeff islands, keeping our course towards Cape Visoki on New Siberia. On June 13 [June 26], I took the course towards Bennett Island. The ice was pretty broken. On June 25 [July 8], three miles from Cape Visoki the ice was definitely broken. Preparing to take to our baidaras (leather boats), we killed our last dogs. From here we were carried on an ice-floe, for four and a half days, 48 miles in the desired direction. Then, having noticed that our ice-floe had drifted 10 miles southwards, we left it on July 31 [Aug. 13], and after having covered the remaining 23 miles in our baidaras, landed on August 3 [August 16] on Bennett Island, at Cape Emma.

According to the survey of Seeberg, who has also determined the magnetic elements both here and on the journey—in ten places in all—Bennett Island is a plateau, not higher than 1,500 feet. By its geological structure it appears as a continuation of the plateau of Middle Siberia, which is built up, here also, of very ancient marine deposits (Cambrian), pierced by eruptions of basalt. In places one finds, under the sheets of basalt, deposits of brown coal with relics of vegetation, namely, conifers. In the valleys of the island bones of mammoths and other Quaternary-period animals, washed out of the deposits, are found occasionally.

As to the present inhabitants of Bennett Island, they are, besides the temporary visitor, the walrus, the polar bear, and the reindeer. A herd of some thirty of the latter wandered on the rocky feeding ground of the island. We fed upon them and made out of their skins the fur cloth and the boots required for the winter journey. The following birds stay here: two species of Somateria, one sand-snipe, one bullfinch, and five species of gulls, including the roseate one.

As for migratory birds, we saw one eagle which flew south to north, one falcon which flew north to south, and geese, whose flock went also north to south. Owing to fogs we could not see the land wherefrom these birds came; neither could we see Sannikoff's Land any more than during our last navigation.

We are going to leave here the following instruments: a reflecting circle with artificial horizon, a Krause's inclinometer, the anemometer, the photographic apparatus "Norah," and some others.

To-day we are going southwards. We have provisions for fourteen to twenty days. All in good health. $76^{\circ} 38' N.$ lat., $149^{\circ} 42' E.$ long.

(Signed) BARON E. TOLL.

Bay of Paul Köppen on Bennett Island,
October 26 [November 8], 1902.

Prince Kropotkin, commenting on the above short sketch of Bennett Island, says:

It shows that the same old continent which we see on the Vitim, and in north-western Mongolia once extended far beyond the present northern limits of Asia; and that the relics of this continent have now in the far north the same character as I saw on the Vitim; namely, a backbone of old, probably Cambrian, crystalline rocks, levelled in the course of ages to the plateau form and covered in places with relics of Tertiary woods. These relics, in their turn, are covered with Post-Tertiary layers of basaltic lavas. Consequently, even in this high latitude (beyond $76^{\circ} 38'$), possibly at the northern extremity of what was then an immense continent which spread from middle Asia north-eastwards, coniferous trees used to grow during the Tertiary period; a result the importance of which every geologist will appreciate.

About 20 months have elapsed since Baron Toll left this document on Bennett Island, and little hope remains that Toll and Seeberg, with their two faithful hunters, are still alive.

SOME INDICATIONS OF LAND NEAR THE NORTH POLE.—Mr. R. A. Harris of the U. S. Coast and Geodetic Survey read a paper on this topic before the Philosophical Society of Washington in April. The sea through which the De Long Expedition drifted to the northwest for many months extends from Bennett Island in the west to Banks Land in the east. North of the eastern part of the Alaskan coast it is known as Beaufort Sea. That land probably extends to the north of Beaufort Sea may be inferred from the fact that the ice found here is very old, the sea seeming to have no broad outlet through which the ice can escape, as it does north of Siberia. It seems probable that land, continuous or nearly so, must extend far westward from off Banks Land. This supposed land and the eastward current along the Arctic coast of North America may explain why it is that the ice never recedes far northward from the northern coast of Alaska nor westward from Banks Land.

In the extreme north this land cannot extend much beyond the pole toward Franz Josef Land, because if it had stretched far in that direction it would undoubtedly have caused a bend in the track of the *Fram's* drift. Mr. Harris also reasons that the tides on the Arctic coast of Alaska seem to confirm the view of the existence of this undiscovered land.

Some years ago Captain Herendeen, of the whaling fleet, as reported in a paper by the late Marcus Beker, said he had often been told that natives wintering between Harrison and Camden Bays on the Alaskan coast had seen land to the north in the bright, clear days of spring. The only report of land having been seen to the north by white men was made by Captain John Keenan, of

Troy, N. Y., in the seventies. He said that while stowing whale oil in thick weather the fog suddenly cleared and land was distinctly seen by himself and all the men of his crew. As he was not on a voyage of discovery, and there were no whales in sight, he was obliged to give the order to keep away to the south in search for them.—(*Nat. Geog. Mag.*, June, 1904.)

OBITUARY.

ELI SOWERBUTTS.—Mr. Sowerbutts was born in 1834. He founded the Manchester (England) Geographical Society in 1884, and gave to it his untiring services as secretary until his death. He was especially interested in commercial geography and in geographical education, and frequently lectured on these topics.

ADMIRAL MAKAROV.—This famous Russian naval officer, who perished on April 13, 1904, in the sinking of the warship *Petropavlovsk* near Port Arthur, was the inventor of the ice-breaking steamer *Ermak*, with which he undertook, in 1901, a voyage to the Arctic Sea east of Spitzbergen. He visited the Kara Sea in the same vessel, enlarged the coast surveys of Novaya Zemlia, and made many important scientific observations in the Arctic regions.

ADOLPH LINDENKOHL.—Adolph Lindenohl, senior draughtsman of the Coast and Geodetic Survey, and for fifty years connected with that branch of the Government service, died at his home in Washington on June 22, in the 71st year of his age. He was born in Niederkaufungen, Hesse Cassel, Germany, and educated at the Polytechnic School, graduating in 1852. In 1854 he became a naturalized citizen of the United States, and was appointed to the Coast and Geodetic Survey. He was the author of many papers on geographical exploration and cognate scientific topics.

GENERAL.

UNIVERSITY HONOURS FOR GEOGRAPHERS AND GEOLOGISTS.—The University of Wisconsin has conferred the degree of Doctor of Laws upon Thomas C. Chamberlin, Professor of Geology in the University of Chicago. Oxford has conferred Doctorates of Science upon Sir John Murray, Professor H. Mohn, the Meteorologist of Christiania, and Sir David Gill, the Astronomer of the Royal Observatory at Cape Town. Professor Angelo Heilprin, late President of the Geographical Society of Philadelphia, has been appointed Lecturer in Physical Geography in the Sheffield Scientific School of Yale University.

AN ATLAS OF VOLCANOES.—The Belgian Society of Astronomy, Meteorology, and Physical Geography has decided to publish a monograph, to be prepared by Mr. Élisée Reclus, descriptive of the volcanoes of the world, together with maps showing their distribution. It is believed that such a work will facilitate future studies in vulcanology and seismology. The map, in colours, will be on a scale of 1:40,000,000, which will be supplemented by an important number of maps on a scale of 1:2,000,000. In the paper which the distinguished geographer presented to the Society he said that students now lacked a very important facility for the study of volcanoes, and that is a map adequately indicating all the volcanic lands of the terrestrial surface, together with all centres of eruption, extinct or active. Without the aid of such a map it is impossible for students to construct well-based theories with regard to the distribution in space or in time of the work done by volcanoes. On the proposed map all the areas whose surface is formed of eruptive rocks will be shown, and the location of the various forms of volcanic phenomena will be marked. Volcanoes that are believed to have been extinct since the historic period, those that have been active since the beginning of human history, and those which have more recently been centres of eruption will all have their distinctive signs.

NEW MAPS.

AMERICA.

UNITED STATES.—Map of Porto Rico, showing location of mining claims. No scale. *Bulletin* 6, Bureau of the Census. Government Printing Office. Washington, 1904.

The map shows the results of the Government investigations thus far as to the distribution in Porto Rico of iron, lead, copper, gold, silver, and salt.

ARGENTINA.—Plano de la Ciudad de Buenos Aires. Scale, 1,100 metres to the inch. In the *Annuaire Statistique* of the City of Buenos Aires. Director General of Municipal Statistics, Buenos Aires, 1904.

A black-and-white map. Reference to all important buildings, railroad stations, etc., facilitated by an index relating to letters and figures on the margin of the map.

PERU.—Provincia de Hualgayoc. Natural scale, 1:500,000, or 7.8 statute miles to an inch. *Boletín* of the Corps of Mining Engineers of Peru, No. 6. Lima, 1904.

The map shows the distribution of gold, silver, coal, and other mining products of the province, and accompanies a long description of the mineral resources of this rich part of Peru.

VENEZUELA.—Map showing the routes of E. André on the Caura River. Natural scale, 1:3,000,000, or 47.34 statute miles to an inch. In *A Naturalist in the Guianas*, by Eugène André. Smith, Elder & Co., London, 1904.

Mr. André travelled up the large Caura tributary of the Orinoco, the middle and upper part of which was very little known. The river is broken with falls and rapids, which mark the abrupt drop of the country from one plateau-level to another; a little north of 5° N. Mr. André discovered Mounts Ameha, Arichi, and Arawa, which are among the flat-topped mountains of the Guianas, Roraima being the most famous among them. The value of the map is that it shows approximately the position of these various geographical features, which up to this time have not appeared on the best maps. The continuous navigable waterway from Port of Spain, Trinidad, up the Macareo branch of the Orinoco delta, the Orinoco, and the Caura to La Prision is shown in red.

EUROPE.

AUSTRIA-HUNGARY.—Schizzo Geologico delle Isole di Lissa e Busi. By A. Martelli. Natural scale, 1:100,000, or 1.5 statute miles to an inch. *Bollettino* of the Italian Geographical Society, No. 5, 1904. Rome.

A coloured map of the Dalmatian islands Lissa and Busi, with nine tints to show the rock-formations and three geological sections.

ASIA.

JAPAN.—General railway map of Japan. Natural scale, 1:3,200,000, or 50.5 statute miles to an inch. Accompanying the Annual Report of the Imperial Railway Bureau for 1902-1903. (Map and Report in English.) Tokyo, 1904.

The Government lines, open or projected, are in red, and the private lines in black. All the more important stations are shown. Insets give the northern part of Kyushu and the environs of Kyoto and Osaka and of Tokyo on a scale of 1:1,600,000, or 25.2 statute miles to an inch, and of Formosa on a scale of 1:3,200,000, or 50.5 statute miles to an inch. The total mileage of the Government and private railroads was 5,803 miles, an increase of 211 miles over the preceding year.

SIAM-COCHIN CHINA.—No scale. *La Géographie*, No. 5, 1904, Paris.

A sketch map, showing the modifications made in the Siamese-French boundary by the treaty of Feb. 13, 1904, and completed by the French-English Convention of April 8, 1904. Symbols show the territory acquired by France by the treaty of last February, the provinces that are to be policed by native troops commanded by French officers, and the zone of French influence recognized by the French-English arrangement.

TIBET.—Karte des Mittleren Teiles von Süd-Tibet. Natural scale, 1:2,000,000, or 31.56 statute miles to an inch. *Petermanns Mitteilungen*, No. V, 1904. Justus Perthes, Gotha.

The map illustrates a paper by Dr. Emil Schlagintweit on "Tibet," with special reference to the British expedition towards Lhasa. All the newest sources of information have been consulted, and the scale is large enough to admit of more topographic detail than is usually shown. The chief trade routes are marked, the positions of forts, monasteries, and passes are shown, and the route of the British expedition from Darjeeling to Gyangtse is traced in red, together with the places where the Tibetans have offered armed opposition to the British advance.

AFRICA.

AFRICA.—Railroad map of Africa. Scale, about 465 statute miles to an inch. *Deutsche Kolonialzeitung*, No. 23, 1904, Berlin.

This black map is on a scale sufficiently large to show clearly all the railroads in Africa that have been completed and those that are in process of building or are projected. Such a map, giving the latest data, is useful, for it readily presents to the mind a great deal of information concerning a class of enterprises that is now especially prominent in Africa. The map gives a good idea of the present state of railroads, and of the many projects that are under contemplation in all parts of the continent. It is almost impossible to keep cartography abreast of information from Africa, and the map illustrates the fact. The Cape to Cairo railroad has been completed to Victoria Falls on the Zambezi, and the Senegambian railroad from Kayes to Bamako, on the upper Niger; but they are not so shown on the map. Construction has begun on the line from Stanley Falls to Albert Nyanza, but it is shown on the map simply as projected.

AFRICA.—Politische Karte von Afrika, 1904. Natural scale, 1:40,000,000, or 6.31 statute miles to an inch. By Prof. Dr. A. Supan. *Bevölkerung der Erde* XII, Supplement No. 146 to *Petermanns Mitteilungen*. Justus Perthes, Gotha, 1904.

This is the latest contribution to the political map of Africa. Perhaps no similar map of the continent has recently appeared on which so large an extent of the boundaries between the various European possessions is marked as hypothetical. This means, in most cases, that the boundaries have not been delimited; and while they may be laid down on small-scale maps with approximate accuracy, they, of course, cannot be entirely exact. The boundaries of the entire Anglo-Egyptian Sudan, excepting on its Red Sea frontage, of Tripoli, all the Gulf of Guinea countries, Rhodesia, and the southern frontier of the Congo Free State, are among those that are marked as hypothetical. Dr. Supan does not attempt to outline the boundary between Abyssinia and British East Africa, but simply marks the region, "English Boundary Undetermined."

A small inset map of Africa is very suggestive, as showing the slow but steady improvement in the facilities for securing a better approximation to the population of large areas in that continent. This is due, in considerable measure, to the enumeration needed for the collection of the hut tax, now imposed by the various Governments upon the natives in the whole or parts of their colonies. Dr. Supan says, in his preface, that while these official determinations of population do not reach a high degree of accuracy, they have much higher value than the estimates of earlier years, and show that those estimates were as likely to exceed as to fall short of the truth.

The regions, including those in which censuses are carried out, where improved data relating to statistics of population are now accessible, embrace Algeria, Egypt, Eritrea, Senegambia, the coastal fringe of Sierra Leone and Liberia, the French, German, and British possessions on the Gulf of Guinea, Angola, Uganda, and the south part of British East Africa, German East Africa, Rhodesia, South Africa, and Madagascar.

WEST AFRICA.—Mission Niger-Bénoué-Tchad. By Captain Charles Lenfant. Scale, 1:2,000,000, or 31.56 statute miles to an inch. *La Géographie*, No. 5, 1904. Paris.

The map shows the waterways followed by the Lenfant Mission from the Benue tributary of the Niger up the Mayo-Kebbi, Lake Tuburi, the Logone and Shari Rivers to Lake Chad, which established the existence of a continuous waterway

between that lake and the Atlantic Ocean. Indications of the conditions of vegetation and of areas along the route subject to inundation are given.

OCEANIA.

AUSTRALIA.—Australie. Natural scale, 1:20,000,000, or 315.6 statute miles to an inch. *Bulletin of the Royal Belgian Geographical Society*, No. 2, 1904. Brussels.

A black-and-white sketch map, on which are marked the locations of the aboriginal tribes of Australia. The map illustrates the chapter dealing with the Australian natives in Mr. P. Hermant's monograph.

SOUTH SEA ISLANDS.—Kaiser Wilhelm Land und der Bismarck Archipel. Natural scale, 1:6,000,000, or 97.8 statute miles to an inch. *Deutsche Rundschau für Geographie und Statistik*, Vol. XXVI, No. 9. A. Hartleben, Vienna, 1904.

The map contains the latest information appearing in the best German atlases and on a somewhat larger scale.

POLAR.

ANTARCTIC.—Showing the routes of the steamers Antarctic and Uruguay in the waters adjacent to Graham Land; also the routes of earlier expeditions in the same region. Mercator Projection.

ANTARCTIC.—Showing the results of explorations in the Graham Land Region. With insets, giving (1) the conjectured outlines of the Antarctic Continent as modified by the discoveries of the British, German, and Swedish expeditions, and (2) the geographical relations of the Antarctic Continent to the continents bordered by the Pacific Ocean. Mercator Projection.

These two maps illustrate papers printed in the last number of the *Boletín* of the Argentine Geographical Institute (Vol. XXII, Nos. 1-6). They are black maps on a comparatively large scale (scale not given), but show the geographical work done in the part of Antarctica to the south of South America, including that of the latest expeditions, on a larger scale and with more detail than in other maps up to this time.

ATLASSES.

CLIMATOLOGICAL ATLAS OF THE RUSSIAN EMPIRE, 1849-1899. 89 Map Plates and 15 Plates of Diagrams. Nicholas Central Physical Observatory. St. Petersburg, 1900. (In Russian, with French translations of titles and explanations on the plates and a French pamphlet of 61 pp. explanatory of the maps and diagrams.)

This fine work, giving cartographical expression to the results of a half century of observations on the climate of the Russian Empire, is a memorial of the fiftieth anniversary of the founding of the Nicholas Central Physical Observatory. The volume is a large folio, and each of the plates, embracing the entire empire, covers a double page. The maps, produced by lithography, give a clean-cut and pleasing expression of geographical detail. Hydrography is shown in blue, topography in buff, and on this basis, so essential for the interpretation of the meteorological factors, the climatic information is superimposed.

All the maps are based upon the results of observations, and the Gregorian as well as the Russian calendar is employed. Thirteen maps are given to atmospheric pressure, 17 to temperature, 26 to humidity, 7 to precipitation, 7 to number of days of rainfall, 9 to sunshine conditions and the number of clear and cloudy days, 3 to the freezing and reopening of rivers, 1 to the duration of the snow covering, 1 to the distribution and average number of storms, and 5 to types of atmospheric conditions

and the tracks of cyclones. The facts graphically shown on the map-sheets are summarized and supplemented with other information in the accompanying letterpress. This superb work is a fitting culmination of the services to science which the Nicholas Observatory has rendered up to the present time.

THE UNITED STATES.—*États-Unis.* Natural scale, 1:10,000,000, or 157.8 statute miles to an inch. No. 72 in *Atlas Universel de Géographie*, by Vivien de Saint-Martin and Fr. Schrader. Hachette & Co., Paris, 1904.

This excellent general map on a small scale is to precede, in this atlas, the four-sheet map of the United States on double the scale. Considering the small scale, the compiler and engraver have succeeded in presenting a large amount of topographic detail, much of it taken from the sheets of the Geological Survey, with sharp definition and not much masking of the nomenclature. It might have been well, while producing the orographic features with good effect, to indicate the two regions in this country that lie below the sea-level. Pierre is not indicated as the capital of South Dakota. The railroad is not shown as completed in Cuba between Havana and Santiago. Such slight blemishes as these may easily be corrected in the next edition.

BOOK NOTICES.

The New Era in South Africa, with an Examination of the Chinese Labour Question. By Violet R. Markham. 200 pp., with Economic Appendices and Index. Smith, Elder & Co., London, 1904. (Price, 3s. 6d.)

This is a careful and extended treatment of all the economic problems that have arisen in South Africa since the Boer war. The capital consideration there to-day is the question of labour, and Miss Markham gives 61 pages to it. She presents many facts against the theory that South Africa can ever become "a white man's country," in all that expression implies, for it is certain that the Bantu natives will always be a vastly preponderating element. Here is her statement of the reason why South Africa cannot be a white man's country at all:

South Africa, lying as it does in tropical and sub-tropical latitudes, is not geographically a white man's country. It is merely the geological accident of the great height above sea-level of her central plateau which renders the country habitable by Europeans. Owing to that accident the European can live under a tropical sky and bring up his children in a healthy land blessed with magnificent climate. But we cannot escape from the fact that if the white man can prosper in this land, so to an even greater extent can the original Bantu races. South Africa possesses a large indigenous population of marked vitality and strength. Unlike other aboriginal races in different parts of the world they have not dwindled and decayed by contact with white civilization.

The author says that south of the Zambezi the blacks outnumber the whites in a proportion estimated at from 6 or 10 to 1, and their relative rate of increase is much greater. This black population

must live, and as their standard of civilization increases they will be forced to take a more and more active part in the industrial and agricultural concerns of the country. They are the natural working class, and the racial cleavage, which exists wherever a higher and a lower race live side by side, will never permit the whites to labour among them on terms of equality. Even if this were possible, the lower economic standard of the black would always enable him to drive the unskilled white labourer out of the market, for the black is willing to work for a much lower wage. On the Rand the native is well paid at \$15 per month; the European can barely support himself and his family on \$125 per month. There is no room in South Africa for unskilled white labour. Miss Markham regards a South Africa populated with white men from Cape Town to the Zambezi as a Utopian dream. It is at one and the same time a white man's and a black man's country.

The book is a very valuable contribution to our knowledge of the social and economic problems in South Africa, and it should be read by all who are interested in the progress of that great region.

Die Volkszählung vom 1 Dezember, 1900, im Bremischen Staate. Band I. Bremen Statistical Office, Bremen, 1903.

This book of 291 pages is packed with minutely-detailed information about the City of Bremen and its inhabitants. It is an example of exhaustive statistical treatment applied to a large community. The first chapter, 12 pages, gives the geographical facts—the position and boundary of the free city, its area in hectares, and the areas of parts of it, the heights of many points above sea-level, the stages of water in the Weser at high, low, and mean tide, and comparisons with other rivers, besides meteorological data for all seasons of the year. The volume contains 146 tables and a full index. The coloured maps include a plan of the city in 1902, with colours, showing the limits of Bremen in 1848 and the six subsequent additions to it, the proportion of women in each district engaged in domestic service, the proportion of men in each district engaged in industries, trade, or commerce, and the boundaries of the 23 political divisions or wards of the city.

L'impérialisme allemand. By Maurice Lair. pp. 341. Librairie Armand Colin. Paris, 1902. (Price, 3 fr.—50c.)

The author introduces his entertaining sketch of Germany and the Germans with views on the other branches of the Anglo-Saxon race, which he describes as "proud, tenacious, self-confident, reso-

lute, a race that no climate, no change can enfeeble, and that is certain to be the predominant force in the history and civilization of the future." Brother Jonathan favourably impresses him as a shrewd and capable person, who prefers to put his money into trade rather than to risk it in wars, bombards ports with merchandise rather than cannon, and shelters his own industry behind the McKinley and Dingley tariffs. The book presents, from a French point of view, the causes and results of the consolidation of the German States into an Empire. It gives full credit to scientific organization and some other influences which have so largely promoted German progress; but it is chiefly interesting as a rather caustic analysis of a great nation by a bright writer whose bias is unmistakable.

Geographen-Kalender. Edited by Dr. Hermann Haack. pp. 496, 16 maps, and photogravure of Sir Clements Markham. Second year, 1904-1905. Justus Perthes, Gotha, 1904.

The second number of this annual will be as useful to geographers as the initial volume, for it richly supplements the information of the first number. The publication has already proved its value as one of the best reference works which geographers consult. After the Calendar follows a list of the geographical positions of all the leading cities, tables of the earth's dimensions in metric, English, and Russian measures, a record of leading events of geographic interest during the past year, illustrated by 16 maps, explorations in 1903, compiled by Hugo Wichmann; a review of the geographical literature of 1903, by Dr. Wilhelm Blankenburg; an obituary list, and a geographical address-book by the editor and Mr. Wichmann, covering 290 pages, including lists of all Societies relating to geography and cognate sciences, the higher schools in which these sciences are taught, geographical and related publications, and the addresses of publishers throughout the world who give special attention to geography. The first volume contained the addresses of about 5,000 working geographers, and the annual thus especially facilitates communication among manifold geographical interests. The volume ends with tables of international postal rates.

A Naturalist in the Guianas. By Eugène André. With a Preface by Dr. J. Scott Keltie. pp. vii and 310, 34 illustrations, Index, and map. Smith, Elder & Co., London, 1904. Imported by Charles Scribner's Sons, New York. (Price, \$3.50 net.)

The author describes his visits to the Caura River, one of the

little-known southern tributaries of the Orinoco, which makes its way north from the Guiana Mountains through one of the dense forest regions that are still little trodden by explorers. Though Mr. André is more a naturalist than a geographer, a large amount of geographical information, especially interesting because much of it is new, is interspersed among his vivid descriptions of the vegetable and animal life in this remote region. His second expedition in 1900, when he ascended the river to within five degrees of the Equator, ended in tragedy; for his boat was wrecked in the Arichi Rapids, and six men in his party of fourteen succumbed to their hardships during the twenty-six days of retreat to one of the poor little settlements.

The story of what he saw while collecting orchids, birds, butterflies, and small mammals is well worth telling, and the book is not only very interesting but is also a distinct contribution to our knowledge of a typical region in the South American forests. Here is a part of his sketch of the primitive life of the people in Venezuela:

What strikes one most forcibly while travelling through Venezuela is the total absence of comfort in the homes of the people; and this is not confined to the poorer class of peasants, for men of means owning large cattle *hatos* or coffee plantations are content to live in the same miserable manner. A rough table, a bench, a few plates, perhaps a glass, the hammocks of the family—that is the entire furniture of a man like Medina, who owns more property than any one else at La Prision. Not a single person at this settlement could read or write. Once every two or three months a sort of travelling scribe visits the place and stays for a few weeks, answering letters and arranging accounts.

The following passage explains the rapids and falls in the river which so greatly impeded him and finally involved his second expedition in disaster:

All the maps to which I have access give no idea whatever of the country through which the Caura flows, although the course of the stream is tolerably correct. At Pará the land rises abruptly some 800 feet to a plateau about 1,000 feet above sea-level, and this plateau in its turn rises gradually to 1,500 feet at Ameha and to some 2,000 feet at the foot of the Merevari Range. This tract of elevated country must be of considerable extent; it probably constitutes the whole of the most northerly portion of Brazil drained by the Branco and its tributaries.

One of the most interesting of Mr. André's discoveries was in the southern part of the Caura basin, where he saw a number of the flat-topped and isolated mountains, with nearly vertical sides, of which Roraima, further east on the boundary between Venezuela and British Guiana, is the best known. These mountains, evidently once a part of an elevated tableland, have been gradually isolated by a process of cleavage and erosive action, and survive to-day as

superb witnesses of former geological conditions. "Considering that Roraima," says the author, "is only one of a whole series of such masses, the existence of some of which may not even be suspected, we can form some idea of what yet remains to be done in the exploration of this little-known part of South America."

Mr. André attempted to ascend one of these mountains, Ameha, but was defeated by its precipitous walls. The illustrations are from excellent photographs, and give a good idea of the Orinoco and Caura Rivers, the Indians, and the tangle of forest vegetation.

The Results of the Census of England and Wales in 1901. Compiled by William Sanders. 131 pp. Charles and Edwin Layton, London, 1903. (Price, 3s. 6d.)

A digest of the census results, compressed into less than a fiftieth part of their original bulk. All the most important tables are preserved in a very concise form, and the book is certainly a time-saver and a convenience.

Among the Indians of the Paraguayan Chaco. A Story of Missionary Work in South America. By W. Barbrooke Grubb. 176 pp., 57 illustrations, a map, and Index. Charles Murray & Co., London, 1904. (Price, 2s. 6d.)

The part of the Chaco occupied by these mission stations is a little north of the Pilcomayo River, where Indians killed Creveaux and other explorers. These Indian tribes bear an evil reputation. The influence of the Chaco Indian Association is tending to lead the Lengua Indians to adopt a more settled mode of life on cattle farms and to give up their roving propensities. They are not now dreaded by the Paraguayans; and the Argentine Government has been so favourably impressed by the civilizing influence of these missionaries that it has offered them three reserves in its own part of the Chaco for the establishment of similar mission stations. The book tells the story of life among these Indians and describes their ways of living.

L'Inde d'aujourd'hui. By Albert Métin. 304 pp., and Index. Librairie Armand Colin, Paris, 1903.

This is a study of the social conditions of India from the pen of a college professor whose earlier books had already introduced him most favourably to the public as a writer on sociological topics. He finished in India the preparation he began in the libraries for writing this book. The two great divisions of the people—the Hindus,

or followers of the faith of Brahma, and the Mohammedans, the effect upon them of the alien Government to which they have been subjected, their attitude towards Occidental influences and whither these great masses of humanity are tending, are the basal subdivisions of his theme. The book is not polemical, nor does it deal with hypotheses, but it gives evidence, above all, of being the fruit of observation.

The first chapter is briefly historical and geographical. Some of the influences of geographical environment are well characterized. In a chapter on the distinctive place of the Parsis in East Indian society, Mr. Métin says that, open as they have been to all Western influences, they would have made India another Japan, or at least an autonomous colony, if they had not been a very small minority of the population. Their adaptable character differs widely from that of the Hindus and Mussulmans, trammelled by tradition and conservatism.

The author then treats of the religion of the Hindus, its ascetic philosophy, superstition, castes, temples and ceremonies; the past and present of Islam, in India; the native principalities; methods of the English administration, its civil and military services and society; the educational systems, based largely on the native schools; and the condition of the people, their old and new industries, emigration, trade, and famines.

Among many facts compactly presented concerning the native principalities the author says that a third of India pertains to native princes, vassals of England, who rule over 66,000,000 of subjects—a little less than a fourth of the total population. The relatively smaller population in the Feudatory States is explained by the fact that they are largely mountainous or desert. There are 160 native States of some importance, besides many very small ones, as, for example, a little district near Simla, which has only 170 inhabitants. The largest native State is Haidarabad, which is three-fifths as large as France, with 11,500,000 inhabitants. The native sovereigns are under the control of English Residents, have foreign relations only with England, and their soldiers are deprived of modern weapons, excepting a few regiments, about 20,000 men, in the northwest frontier States. These regiments are at the disposition of England, under the name of Imperial Contingents. The native rulers, in theory, are masters of their own internal affairs, but, in fact, they follow the advice which the Imperial Government freely gives them. Their institutions are coming, more and more, to resemble those of the British provinces.

On the whole, the native rulers accept the British tutelage, and lose no opportunity to show their fidelity to the Imperial Crown. The book is illuminative, and interesting from cover to cover.

Japan To-Day. By James A. B. Scherer. pp. 322, and 28 photographs. No index. J. B. Lippincott Company, Philadelphia, 1904. (Price, \$1.50.)

The author was a teacher of English for over four years in the Government school at Saga, southern Japan, and is now President of Newberry College, S. C. His book is not an ordinary work of travel. It is filled with the impressions of an acute observer during a long residence in Japan. It is neither a history nor a connected description of Japan, but the light it throws on the country and its life is most welcome, and much of it is such as is seldom derived from books of travel. The author tells how Japan and the Japanese looked to him as he went on his bicycle tours, and as he saw life in the street, the field, the school room, and the home. He writes of the home life, the language, the sermons of the Buddhist priests, the students, traits of Japanese character, and many other aspects in a fascinating style and with a wealth of anecdote and reminiscence, all written with abundant humour. Two or three condensed quotations will illustrate the information given and the author's way of imparting it. Here are a few remarks on the Japanese language:

The Japanese language ignores both number and gender. The verb is always the same whether as predicate for the first or second or third person. *Shokusuru* means I eat, you eat, he or she eats, we eat, and they eat. It is as unchangeable as the notorious laws of the Medes and Persians. It does not recognize personalities; it has no person. . . . It is bad enough for the verb to be so impersonal and so numberless, but the deficiency is the more apparent in the noun itself. *Inu* means either dog or dogs; *boshi* may denote one hat or a dozen; only where it is absolutely necessary are words suffixed to signify plurality; in all other cases one must judge from the context whether the subject be single or otherwise. And so it is with gender.

The author says there are no declensions in this queer language; neither is there any article. Another characteristic is the complicated system of honorifics, which is a source of annoyance and perplexity to the student. Dr. Scherer turns a few simple phrases into their exact Japanese equivalent, with these results:

"Please excuse me," becomes "august excuse deign"; "go slowly," "augustly leisurely going deign to be"; "I feel bad," "bodily state bad is"; "good morning," "honourable earliness is."

The conclusions which the author draws from these and other examples are that honorifics complicate the language almost hopelessly and that it is impossible to translate English literally into

Japanese. The English phrase must first be contemplated from a Japanese point of view, and this reclothed expression then translated into its equivalent.

The Japanese are anxious to air their proficiency in English, and vanity prompts them to a ceaseless display of their ignorance. The author gives many amusing illustrations, and among them some of the English signs over Japanese shops. Over a watch store is the sign: "Time Piece Snop, to sell the Insurable Watch." Another sign is "Carver & Gilder for Sale." An excellent restaurant gleams with the brutally humble announcement, "a grog shop, a pot house." A barber shop has the sign "Savings & Cuttings of hairs within." Many barber shops have the sign "baber sop."

The author taught English conversation and composition, reading, and dictation in a fine new building erected by the Government, where the other branches of instruction were German, Chinese, Japanese, general history, geography, mathematics, chemistry, physics, ethics, zoology, drawing, agriculture, gymnastics, and military tactics. The course requires five years, the boys coming to the school from a primary school and going thence to a still higher academy, where they are prepared for the Tokyo University.

The chief of the public exercises consists in a unanimous worshipful bow before the picture of the Emperor. Patriotism is strongly inculcated; it would be difficult to find anywhere a set of people more in love with their country than are the Japanese students.

Unfortunately, the schoolhouse burned down, and the boys stood weeping in group. It was found, however, that it was not the loss of the building but the burning of the Emperor's picture that filled them with grief.

It was a photograph that could be replaced for less than a dollar; but the fact that the Emperor was being treated with disrespect by the burning of his picture meant more to these frenzied young patriots than the destruction of their fine, new school.

Most of the illustrations are new, and all of them are well chosen. It is unfortunate that any good book like this should be without an index.

China Past and Present. By Edward Harper. xi and 424 pp.
Map and Index. Chapman & Hall, London, 1903.

Professor Parker, who has lived in China and other Oriental countries during most of his active life, and is now Professor of Chinese at the Owens College, Manchester, has an intimate knowledge of many phases of Chinese life and character. He speaks in this book from ample observation of many things Chinese, from the Imperial family to the peasant, and from religion to crime. But

while it will rank high among books on China, the volume would be more valuable if it were written less diffusely and if all of it had been prepared for the book, instead of many chapters for magazines and reviews. The result is a book that is not so compact and well balanced as it might be, and at least a fourth of it might be spared. Professor Parker has not been so much impressed with the evils of opium-smoking as some other writers. He says it is a waste of time and money, but he never observed any dreadful inroads upon the constitution. All who smoke are rather ashamed of it.

NOTES AND NEWS.

PRESIDENT PEARY received on the 29th of June a letter informing him that the Société de Géographie, Paris, had awarded to him by unanimous vote a gold medal, in recognition of the services rendered to geographical science by his remarkable journeys and explorations in the Polar Regions.

THE GAUSS IN CANADIAN WATERS.—Captain Bernier, who is in command of the Canadian Government expedition to Hudson Bay this summer, has written to a friend in this city that the Antarctic exploring steamship *Gauss*, purchased by Canada for the expedition, was in dry dock at St. Joseph de Lévis, near Quebec, and that about July 15 she would leave for the north with supplies and coal for the Government steamer *Neptune*, which wintered in Hudson Bay. It is said that the *Gauss* will probably take on board a detachment of mounted police, to be placed on some of the northern islands.

A MILD WINTER IN ALASKA.—Mr. Hugh Lee has written to President Peary from Cape Prince of Wales, Bering Strait, that the past winter in Northern Alaska was uncommonly mild. He says: "There has been very little ice in this part of the Arctic and the weather has been milder than for years past. The temperature was not lower than -30° . All winter long the shore of the Arctic Ocean for 40 miles north of here and probably more was, from time to time, entirely free from ice, with waves dashing on the shores as in summer. Of course the ice would come in with an on-shore wind; but Bering Sea, the Strait and the Arctic Ocean northeast of the Strait were remarkably free from floe ice."